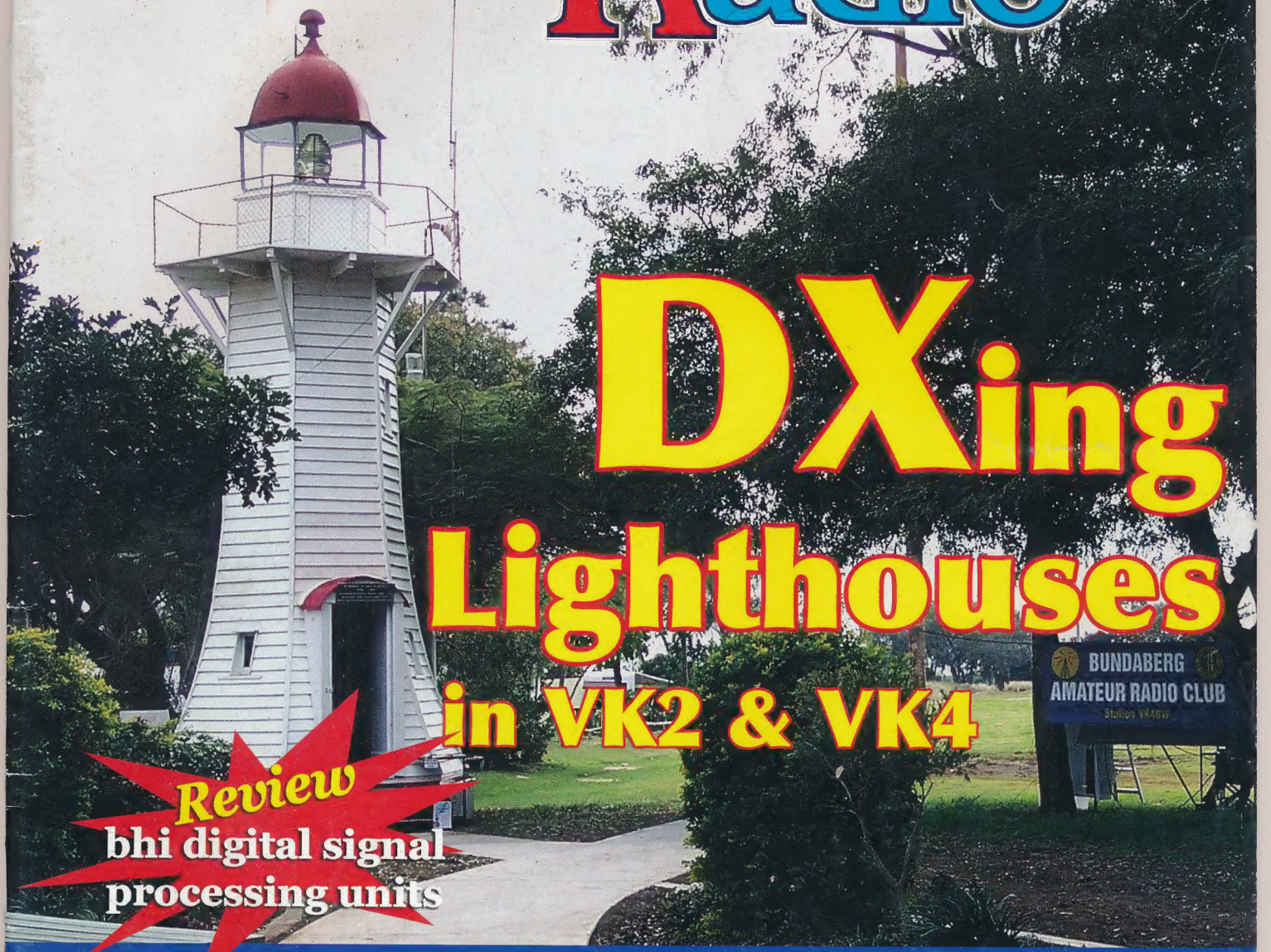
Volume 73 No 10
October 2005

Amateur Radio

$6.50
incl GST

WIRELESS INSTITUTE OF AUSTRALIA

The magazine for AUSTRALIAN radio amateurs



DXing Lighthouses in VK2 & VK4

Review
bhi digital signal processing units

- A simple-to-make dipole for HF bands
- An automatic knob twiddler for the 40m CW band
- The development of radios in the Flying Doctor Service. Part 3
- Fuses, or how to get a smaller bang for your buck!
- Radiated power
- The Ten Tec Orion is different!
- Working DX 16 metres above the Indian Ocean

9 770002 685109 10

BENELEC

YAESU

A Portable for All Situations..... ... with a BONUS!

Clearance Item*
VX-1

2m / 70cm
$310.20

VX-2

2m / 70cm
$343.20

Clearance Item*
VX-5

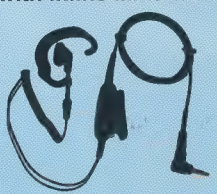
2m / 6m / 70cm
$441.70

VX-6

2m / 70cm
508.00

Included with These Models

FREE
Soft Hook Ear Plug
with inline Mike & PTT



Value $68.00

Clearance Item*
VX-150

2m
$227.70

Included with These Models

FREE

Value $68.00
Speaker Mike
with CT91

VX-7

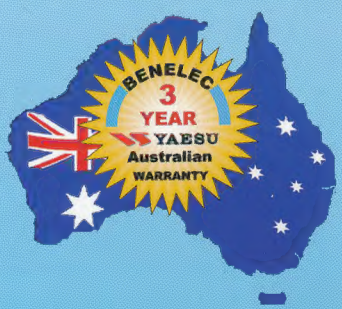
6m / 2m / 70cm
$695.00

FT-60

2m / 70cm
$375.90

VX-170

2m
$290.80



***While Stock last**

All Price icludes GST

Benelec Approved Amateur Transceiver Dealers

NSW
Andrews Communications Systems
Tel: 02 9636 9060 lee.andrews1@bigpond.com

Newcastle Pro Sound & Communications
Tel: 02 4965 6899 sales@newcastleprosund.com.au

Action Communications
Tel: 02 4732 2788 action@pnc.com.au

VIC
Strictly Ham P/L
Tel: 03 9729 7656
vk3my@bigpond.net.au

G & C Communications
Tel: 03 5996 3298
gccomm@bigpond.net.au

Qld
Kyle Communications
Tel: 07 3857 4400
mark@kyle.com.au

Ozhelp Services
Tel: 07 3273 7263
sales@ozgear.com.au

SA/NT
POSNAV Systems P/L
Tel: 08 8285 2400
brenton@posnav.com.au

WA
Bushcomm Pty Ltd
Tel: 08 9296 0496
bushcomm@bigpond.com

www.benelec.com.au

Amateur Radio

Volume 73, Number 10
October 2005

The Journal of the Wireless Institute of Australia

ISSN 0002-6859

Editorial

Editor: Colwyn Low VK5UE
edarmag@chariot.net.au

Technical Editor: Peter Gibson VK3AZL

Publications Committee Members

Brenda Edmonds VK3KT
Ron Fisher VK3OM
Don Jackson VK3DBB
Evan Jarman VK3ANI
Tom Potter VK3UBS
Bill Roper VK3BR

Submission of material to Amateur Radio Magazine

General and Technical articles to
Secretary
AR Publications Committee
3 Tamar Court
Mentone VIC 3194
or armag@optusnet.com.au

Columns and Letters to the Editor to
Editor
AR Magazine
34 Hawker Crescent
Elizabeth East SA 5112
or
edarmag@chariot.net.au
(Tel and Fax 08 8255 2138)

Hamads to
"Hamads" Newsletters Unlimited
PO Box 431
Monbulk VIC 3793
Fax 03 9756 7031
newunltd@bigpond.net.au

Advertising
All enquiries to
Newsletters Unlimited
PO Box 431
Monbulk Vic 3793
Phone: 03 9756 7797
Fax: 03 9756 7031
newunltd@bigpond.net.au

Registered Office
10/229 Balaclava Road,
Caulfield North VIC 3161
Australia
Phone: 03 9528 5962
Fax: 03 9523 8191

Production Deadlines

Advertising booking and articles for publication 10th of preceding month.

Hamads and advertising material deadline 18th day of preceding month

The contents of Amateur Radio are Copyright Wireless Institute of Australia © 2004

GENERAL

The development of radios in the Flying Doctor Service. Part 3 10
Rodney Champness VK3UG

Working DX 16 metres above the Indian Ocean 18
Graham Rogers VK6RO

Green Cape Light 2005 19
Ken Robertson VK3HKR

The International Lighthouse and Lightship Weekend 20
Ron Brumley VK4FC

Celebrating the ITU's 140th birthday 25
Barry Robinson VK3JBR

TECHNICAL

Small vhf beam: performance and maintenance 4
Felix Scerri VK4FUQ

A simple-to-make dipole for HF bands 5
Hayden Honeywood VK7HAY

An automatic knob twiddler for the 40m CW band 6
Joe Rotenberg VK3BBN

Fuses, or how to get a smaller bang for your buck! 13
Clive Wallis VK6CSW

Radiated power 15
Bill Isdale VK4TWI

The Ten Tec Orion is different! 22
Martin Luther VK7GN

Review: bhi digital signal processing units 26
Eric Buggee VK3AX

Heavy duty standoff insulators for ladder line (Technical abstracts) 51
Peter GibsonVK3AZL

COLUMNS

ALARA 36
AMSAT 37
Awards 34
Beyond our shores 50
Contests 41
Directory 56
DX News & Views 43
Editorial comment 2
Equipment Review 26
Hamads 54
HF predictions 52
News from... 30
VK2 30
VK3 30
VK4 31
VK5 31
VK6 32
VK7 33
Over to you 40
Silent keys 9, 40, 44, 47
Spotlight on SWLing 35
Technical Abstracts 51
The things we do 19, 20, 21, 48.49
VHF/UHF – an expanding world 45
WIA comment 3
WIA news 4

Our Cover this month

It's the season for Lighthouse activity. See the stories of 2 DXpeditions on pages 19 and 20. Cover picture is from Ron Brumley VK4FC

Contributions to Amateur Radio
Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the National Office on receipt of a stamped self-addressed envelope.

Back Issues
Back issues are available directly from the WIA National Office (until stocks are exhausted), at $4.00 each (including postage within Australia) to members.

Photostat copies
When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer
The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's first and oldest National Radio Society
Founded 1910

Representing
The Australian Amateur Radio Service

Member of the
International Amateur Radio Union

Registered Office of the WIA
10/229 Balaclava Road, Caulfield North Vic 3161
Tel: (03) 9528 5962 Fax (03) 9523 8191
email: nationaloffice@wia.org.au
http://www.wia.org.au

All mail to
PO Box 2175 Caulfield Junction VIC 3161
***Business hours:* 10am – 4pm weekdays**

National Office staff

Judith Oliver	Office Coordinator
Emma Trebilco	Examinations Officer
Brenda Edmonds	Office Assistant

Board of Directors

President	Michael Owen	VK3KI
Vice-President	Ewan Mcleod	VK4ERM
	Robert Broomhead	VK3KRB
	Glenn Dunstan	VK4DU
	Trevor Quick	VK5ATQ
	Ted Thrift	VK2ARA
	Phil Wait	VK2DKN
Secretary	Chris Jones	VK2ZDD
Treasurer	David Pilley	VK2AYD
Assistant Treasurer	Bruce Bathols	VK3UV

Coordinators

AMSAT	Graham Ratcliff	VK5AGR
ARDF	Jack Bramham	VK3WWW
Australian ARISS	Tony Hutchison	VK5ZAI
Awards	Mal Johnson	VK6LC
Contests	Ian Godsil	VK3JS
John Moyle Memorial FD Manager	Denis Johnstone	VK3ZUX
Editor "AR"	Colwyn Low	VK5UE
EMC/EMR	Gilbert Hughes	VK1GH
	Keith Malcolm	VK1ZKM
Standards	Gilbert Hughes	VK1GH
	David Wardlaw	VK3ADW
	John Bishop	VK2ZOI
NTAC	John Martin	VK3KWA
Historian	t.b.a.	
IARU Region 3 Liaison Officer	Neil Penfold	VK6NE
Intruder Watch	Glenn Dunstan	VK4DU
International Travel Host	John Miller	VK3DJM
ITU Conference and study group	Gilbert Hughes	VK1GH
	David Wardlaw	VK3ADW
	Keith Malcolm	VK1ZKM
QSL Curator	Ken Matchett	VK3TL
QSL Manager (VK9/0)	Neil Penfold	VK6NE
Videotapes Curator	VK2 Division	
Webpage co-ordinator	Colin Thompson	VK2TRC
WICEN	John Weir	VK3ZRV

ACA Liaison Team

Gilbert Hughes VK1GH
Keith Malcolm VK1ZKM
Peter Mill VK3APO
Glenn Dunstan VK4DU

Editorial comment

Colwyn Low VK5UE

Secret Camp

Please note that the author of the Secret Camp radio article had not informed me there were two radios, one from the men's camp which the article covered and another in a pretty box from the women's camp. The pictures showed both.

Are we boring you?

I have received a letter complaining about the boring content of AR. The listed subjects were rare DX, QSL card collecting, ridiculous pointless contests and Morse code. The problem is that this is what a lot of amateurs still participate in and get great satisfaction from.

However the writer goes on to say AR needs to cater for other areas like 2.4 GHz digital networks for data transfer, a narrow specialist area which a lot of people including amateurs participate in but no one thinks to write an article on and send it to AR.

There was also comment on amateur equipment that was available overseas, which was not for sale in Australia. This fails to consider whether we have problems with the equipment meeting our licensing requirements and what the possible market for the equipment is. The author also felt it was the WIA's job to convince manufacturers that they should import certain equipment. Sorry but that is not a function of the WIA. The WIA relies on volunteers to do most of its administrative jobs; there are two paid staff in the National office but no technical staff. The WIA does not have the resources of the ARRL or the RSGB so there are lots of things the WIA would like to do but it does not have the resources to do.

So if any group of amateurs feels that *Amateur Radio* magazine does not cater for their needs please get someone to write an article and then I can publish it and help promote the activity.

Further, AR is more a journal of record of the past with some news of the future but, if you want the WIA views on a topic, you do have to go to www.wia.org.au that carries all the current news on topics of concern to all amateurs.

New assessors

The first round of training of assessors for the new licence assessment process has just about been completed. The ACMA should have published the new LCD and other information to introduce the new licence structure by the time you receive this issue of AR.

So we stand at the door of an important new stage in amateur radio in Australia. If we wish our hobby to survive, then we need to a new generation to join us.

However we have to continually remember that times have changed. The initial licence is now aimed at getting new operators safely on the air using "modern" equipment and operating it responsibly. It is then up to the body of amateurs they come in contact with to encourage them, nurture them, mentor them into the greater levels of competency required to properly enjoy the wide range of technical challenges and modes of operation we can use today.

Things are a lot different from when I got my licence with AM or CW modes and a Morse code test at 12 words per minute. (What was this SSB? Let alone today's PSK31 and WSJT JT 65.) So if we want to be able to sell amateur radio as a hobby with community service skills,we need to encourage new amateurs with today's skills and ensure they learn how to overcome the technical problems of setting up an amateur radio station and being able to operate it using the modes they want to.

My best wishes to those who sit the first Foundation Licence assessments and my thanks to all those who have volunteered their time to make this possible.

LONG LIVE AMATEUR RADIO.
73 Colwyn VK5UE

This month:

Oceania DX Contest 2005

(SSB) 1 – 2 October,
(CW) 8 – 9 October

WIA Comment

WIA President Michael Owen is currently on a well earned break. This months WIA comment is from Director Phil Wait, VK2DKN.

The incredible complexity of WIA

As a relative newcomer, I am struck by the incredible complexity of WIA and the many diverse functions it performs for members and amateur radio generally.

Many, larger commercial organisations are simpler. WIA relies solely on volunteers and two busy staff members. I will use this space to give updates on the most important recent events and our general activity.

With the activation of the Aurora 'Broadband over Power Line' (BPL) trial in Hobart, WIA has been strongly lobbying ACMA. 'Aurora' is a commercial trial with paying customers in a suburb with no existing broad-band provider. It is designed to determine the uptake and viability of such a service.

Prior to Aurora de-activating the part of the system causing interference to a local amateur, the level of interference from the new 200 Mbps DS2 based equipment was similar to that of previous trials, using older 45 Mbps technology, in Queanbeyan and Moruya, NSW.

It is claimed the new 200 Mbps technology has lower interference potential than the 45 Mbps technology. Observations suggest that if it's any lower, it's not much lower.

There was wide media coverage of Aurora, touting the benefits of BPL, with a surprisingly little about its obvious shortcomings. WIA quickly expressed its concern to the various media organisations about the lack of research evident in their one-sided coverage. We are expecting more balanced reporting.

At a recent meeting with ACMA in Melbourne, we strongly put to them that 'they must do something' or have their regulatory position 'white-anted' by the increasing number of Access BPL trials, and a potential flood of In-Home BPL modems into the country.

As was the case with 433 MHz Low Interference Potential Devices (LIPDs), regulation too late is just that – too late.

We have asked ACMA's acting Chair why ACMA are not enforcing their own BPL trial guidelines, WIA again forcefully expressed its belief that the trial guidelines are deficient, and certainly ineffective if not enforced. Our lobbying is continuing and, I believe, partly due to the quality of our submissions, is having some influence.

Attending Standards meetings is an important WIA activity, our 3-person Standards team has attended many such recent meetings. Changes, proposed or actual, such as allowing BPL systems or setting limits for RF exposure to humans, are frequent in EMC and other standards. Our work on Standards committees ensures that WIA is aware early of issues affecting amateur radio. As a stakeholder we have influence in Standards development.

A huge undertaking is the changes to amateur service licensing and amateur service examinations. By late September we expect to have the first batch of Foundation Licence candidates qualified and waiting for the final approval of the new 3-tier licence structure by ACMA.

The new licence is probably the biggest change in amateur radio since the introduction of the Novice licence grades in the late 1970s. We hope the Foundation licence will attract significant numbers of new enthusiasts to guarantee the social relevance and future strength of amateur radio. We expect ACMA to approve the necessary regulatory changes at their board meeting this month.

A strong WIA membership is essential to maintain these many diverse services

A small, dedicated team of people worked with ACMA to develop the new licence structure and the syllabi, they have completely re-engineered the WIA examination service.

The WIA introduced a new 'assessment of competency' system for the new licences, using WIA Assessors to mark examination papers and also provide a practical assessment. These Assessors are qualified and registered by a Registered Training Organisation (RTO) accordance with the Australian Quality Training Framework, and are registered by the WIA as a WIA Assessor.

By now some 80 people will have attended training courses, and a further 26 people have applied to be accredited and registered on the basis of existing current qualifications. As of now, we expect to have well over 100 accredited and registered WIA Assessors nationwide.

Accredited means they are accepted by the WIA as assessors based on training qualifications; registered means registered by WIA for a period, after which they are audited for re-registration.

This is a phenomenal effort by all involved and I particularly acknowledge the work of Ron Bertrand of the Radio and Television School, and Fred Swainston of TrainSafe Australia. Their efforts have been truly Herculean.

A new Foundation Licence Manual, entitled *"Your Entry into Amateur Radio"*, is well into production; this high quality publication will be available through newsagents and WIA registered clubs. It will take prospective amateurs through the Foundation Licence syllabus and will be a valuable marketing tool in attracting new entrants to the hobby.

Work continues on the many other WIA functions and member services.

The *2006 Call Book* is now in production with additional information on the new licence grades and WIA examination services. The Intruder Watch Service is modernising and has been actively tracking interference to HF amateur services from Over-The-Horizon-Radar and others. New Amateur radio DXCC and other awards have been introduced with spectacular new award certificates to grace the shacks of dedicated DX'ers and contesters. Preparatory work continues for the vitally important World Radio Conference WRC07.

For its size, the WIA is indeed a very complex organisation. A strong WIA membership is essential to maintain these many diverse services, and to provide strong representation for Australian amateur radio.

Has the WIA met your expectations? I hope so. If not please let us know, and if we have met them, please let somebody else know.

ar

Small vhf beam: *performance and maintenance*

Felix Scerri VK4FUQ

The general text of this article might be self-explanatory. However, a recent bout of fault-finding has made me realise that some obvious things tend to get missed, resulting in unnecessarily reduced antenna system performance.

Here in Ingham, I use a small homebrew Yagi to increase my general 2 m communications range. Our "local" 2 m repeater is in Townsville, around 70 road miles south, but not a very clear radio path (although a fair bit of it is over water), and a small beam is needed. I use the five-element version of my two "strip" Yagi designs that were featured in *Amateur Radio* in June 1996.

Recently I've noticed a gradual reduction in 2 m signal strengths, and decided to do a little antenna fault-finding. The results have been instructive. As you might guess, excessive coax cable (RG213) line loss was the biggest part of it, presumably caused by water ingress (rain!). As much as coax cable is a very useful feedline, water has a way of getting in and finding its way along the coax cable. The cable loss rises dramatically, and the feedline becomes worthless. The answer is to properly seal all potential points of water ingress. This can be a little messy, but it is well worth it! RG213 is not cheap!

Most amateurs are familiar with the butyl rubber products designed for this purpose. I had used ordinary insulation tape to waterproof the PL259 plugs. Not very effective. I now have several rolls of self-amalgamating tape!

Another observation was the loss resulting from excessive line length. It does pay to keep things as short as practicable. Even on 2 m, general line loss is a potential problem. The thicker, more "heavy duty" 50 ohm coax cables (eg. RG213) are mandatory.

Related is line matching. Line loss is minimised when properly matched at the load. It is worth tweaking up the gamma match or whatever matching system one uses, for the lowest SWR. For accuracy, use a quality SWR meter designed for the desired frequency range.

A final observation relates to antenna gain. Once the feedline problems were corrected, I tried switching from my reference five element to my favourite "portable use" beam, the three element version of the VK4FUQ "strip" Yagi. In theory, a five element Yagi should be better than a three. In terms of gain, this is so! In my tests the superiority of the five element over the three was clear, although the difference should be only around 2.5 dB. Every dB is worth it!

Also, the antenna polarisation is most important. This aspect is obvious, depending on the "modes" one uses (eg. repeater operation requires vertical polarisation). Remember too, if mounting the Yagi "vertically", use a non-metallic support (eg. wood), if the mast is running "through" the line of the elements.

Related to this is "level". During some of my tests, due to the mounting arrangements used, I found the beams were "looking" slightly skyward, although pointing in the appropriate azimuth direction. Despite what one might think, even on a distant and elevated radio "target" such as a repeater (where a slight upward tilt could possibly be considered useful), I found that signals were always strongest when the beam was pointed accurately in the target direction, with the antenna boom strictly horizontal.

Is all this commonsense?

ar

WIA news

Due to a layout error part of this item was omitted in last month's AR

WIA appoints National QSL Bureau Coordinator

The WIA undertook as part of the transition from a federal to a national structure to provide a QSL service at no charge to its members. The WIA Board has formulated a policy which continues to rely on existing individuals and groups, achieving economies of scale by concentrating outward QSLs through the Westlakes club.

The Board decided to appoint the existing VK6 QSL manager, Neil Penfold, VK6NE to fill this position. The Board felt a dedicated manager is required to manage and promote this aspect of the WIA's commitment to its members.

Neil's duties will include:

- Ensure all stakeholders are fully informed and understand the respective roles required to deliver the WIA's QSL commitment;
- Coordinate the activities of all in relation to outward QSL services;
- Ensure that the QSL service effectively meets the needs of members in a cost efficient way;
- Develop improvements to QSL service;
- Maintain an overview of the financial aspects of the service;
- Promote the WIA QSL service as a benefit of membership, and publicise how to use the service;
- Improve and update the part of the WIA website relating to the QSL bureau;
- Respond to questions relating to QSL services;
- Identify and overcome shortcomings in the provision of services;
- Be the focal point for matters relating to the provision of QSL services by the WIA;
- Provide information and advice to the WIA director responsible for QSL services and to WIA Board
- Report as requested to each Open Forum or other meeting following each Annual General Meeting;
- Undertake other tasks relating to the provision of QSL services as requested.

The QSL manager is appointed by the Board after each AGM.

Neil can be contacted at qsl@wia.org.au

ar

A simple-to-make dipole for HF bands

Hayden Honeywood VK7HAY
Email: hhoneywood@huh.tas.edu.au or honeywoodnrs@bigpond.com.

Are you a new amateur radio operator, or a current one that has been inactive for a while and wants to know how to get onto HF quickly? Then here are a few basic antenna designs to get you started.

Firstly, to make a dipole you need to know the measurements and have the materials to construct one. I have written out a list below of the most common things you will need to find around the place.

- A length of wire - depending on what dipole you make depends on how much wire you will need. The wire can be either insulated or bare.
- 3 insulators or more, depending on how many dipoles you are going to make. Some plastic water pipe will work.
- One or more poles or towers to support the dipole.
- Coaxial Cable - for HF, RG58 C/U would suit, if the run of coax is not too long (you lose about 0.7dB at 3.5 MHz for 30 metres). RG213 Coaxial would have a loss of 0.4dB over 30 metres at the same frequency.
- A bit of rope or something similar to tie from the insulator to a post or support in the ground.

To calculate the length of the wire you need, grab a calculator and work out this sum below.

468/Frequency (in MHz) = length in feet

142.65/Frequency (in MHz) = length in metres

E g: If we are going to make a dipole to be resonant on the 80 metre band and we want to know how long it has to be, calculate the following.

468/3.5 = 133.714 feet.

142.65/3.5 = 40.76 metres

Of course if we are going to use our dipole for all modes on the 80 metre band, we would calculate the length for the middle of the band so that we get the best VSWR reading on both sides of centre. Therefore, if we wanted to make our dipole for 3.6 MHz, the length would be:

468/3.6 = 130.0 feet

142.65/3.6 = 39.63 metres

Plus, say, 40 cm or 16 inches for attachment to the insulators. Cut the wire exactly in half. You now have two pieces of wire approximately 19.8 metres or 65 feet long. Now get your centre insulator and drill two holes in it, one at each end. Strip or prepare about 5 cm from one end of each wire and pass them through the holes in each side of the centre insulator and twist the wires together. Solder the braid of the coax to one side and the centre conductor to the other side. Prepare the other ends of each wire and do the same at each end insulator that has also been drilled. Your dipole should now look like Figure 1.

You can feed a dipole with either 75 ohm or 50 ohm coaxial cable, but 50 ohm is more common as most rigs are designed to work into a 50 ohm load. When mounting your antenna, you may want to mount it so that it better matches whichever cable you are using.

For 75 ohm coaxial cable, mount the insulator on pole and have elements suspended straight so that the antenna and cable form a 'T' Shape.

For 50 ohm coaxial cable, mount the insulator on a pole and bend the elements down at 45 degrees so it looks like an upside down, or inverted, 'vee' shape.

The reason we slope the elements down at 45 degrees is to lower the feed-point impedance closer to 50 ohms. A normal straight 'T' dipole has an impedance closer to 72 ohms.

Our dipole is now finished and ready to operate. Just attach a PL259 plug or whatever fits to the coax cable and connect to your rig.

Well I hope you have success with your dipole. If you have any problems just email me at hhoneywood@huh.tas.edu.au or honeywoodnrs@bigpond.com.

ar-

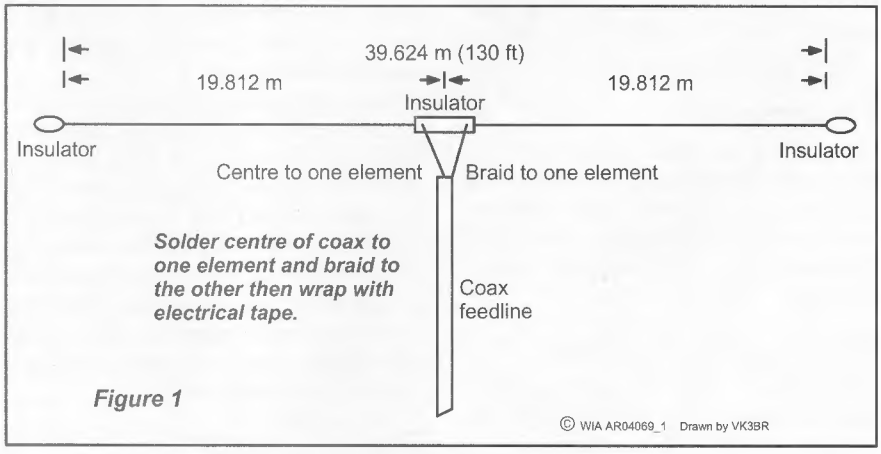


Figure 1

visit
http://www.wia.org.au

An automatic knob twiddler for the 40m CW band

Joe Rotenberg VK3BBN

As it often happens these days, the amateur bands, particularly the CW sections are dead for much of the day. In the hope of getting a contact, I have therefore spent a lot of time twiddling the knob backwards and forwards, hoping that someone might appear and talk to me. This is rather a boring activity.

To solve this problem I present an "automatic knob twiddler"; a receiver which tunes backwards and forwards automatically leaving me to do something else in the meantime. When there is a signal, a "whistle" appears in the speaker; I know that someone is around and I can switch on the main transceiver and work him.

This particular model is for the CW end of the 40 m band, though I cannot see why the idea cannot be made to work on other bands and segments (although I haven't tried it on the other bands).

Principle of operation

A block diagram of the circuit is shown in Fig 1. We see it is just a standard receiver, but with electronic tuning instead of a knob. This electronic tuning is then controlled by a sawtooth generator. Thus the overall effect is the same as if there had been a knob and this knob had been twiddled to and fro.

Some comments on the circuit.

The receiver

The receiver is a direct conversion type lifted holus bolus from a published design [1]. I have made some modifications, most of which are too minor to be worth commenting on, but two items deserve mention:

The audio amplifier

In the original circuit, an audio amplifier stage is given as shown in Fig 2. This is actually a "differentiator" circuit and is rather liable to take off. The reason for this is that op amps such as the 741, LM358, TL084 and many more are "internally compensated" to make them tame when feedback is applied to them. This is achieved by making them behave

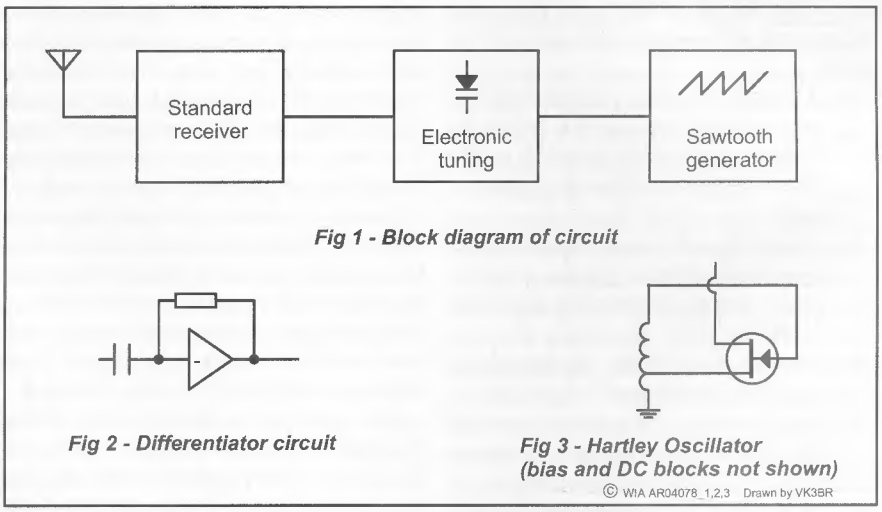


Fig 1 - Block diagram of circuit

Fig 2 - Differentiator circuit

Fig 3 - Hartley Oscillator (bias and DC blocks not shown)

© WIA AR04078_1,2,3 Drawn by VK3BR

Figs 1,2,3

(past a certain frequency) as integrators. [Why an integrator should in fact be tamer than a straight through amplifier is actually an interesting topic, but I don't want to digress; interested readers are invited to write to me.]

At any rate, making the circuit behave as a differentiator cancels this integrator effect and the circuit is then prone to instability like the "uncompensated" op amps like the old 709. I have therefore put a resistor in series with the capacitor so that the circuit is only a differentiator at low frequencies. Higher up, where the capacitor acts as a short circuit it is just an ordinary resistor-resistor feedback network, and quite stable.

The oscillator

The original oscillator uses the standard Hartley arrangement with the tapped coil as shown (without bias and blocking capacitors) in Fig 3. It should be noted, however, that there is no reason for the two sections of the coil (the bit

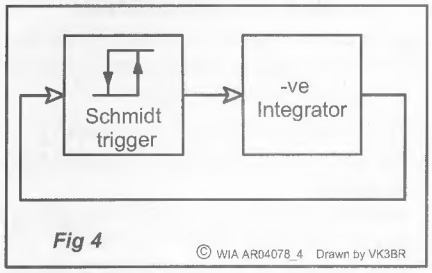


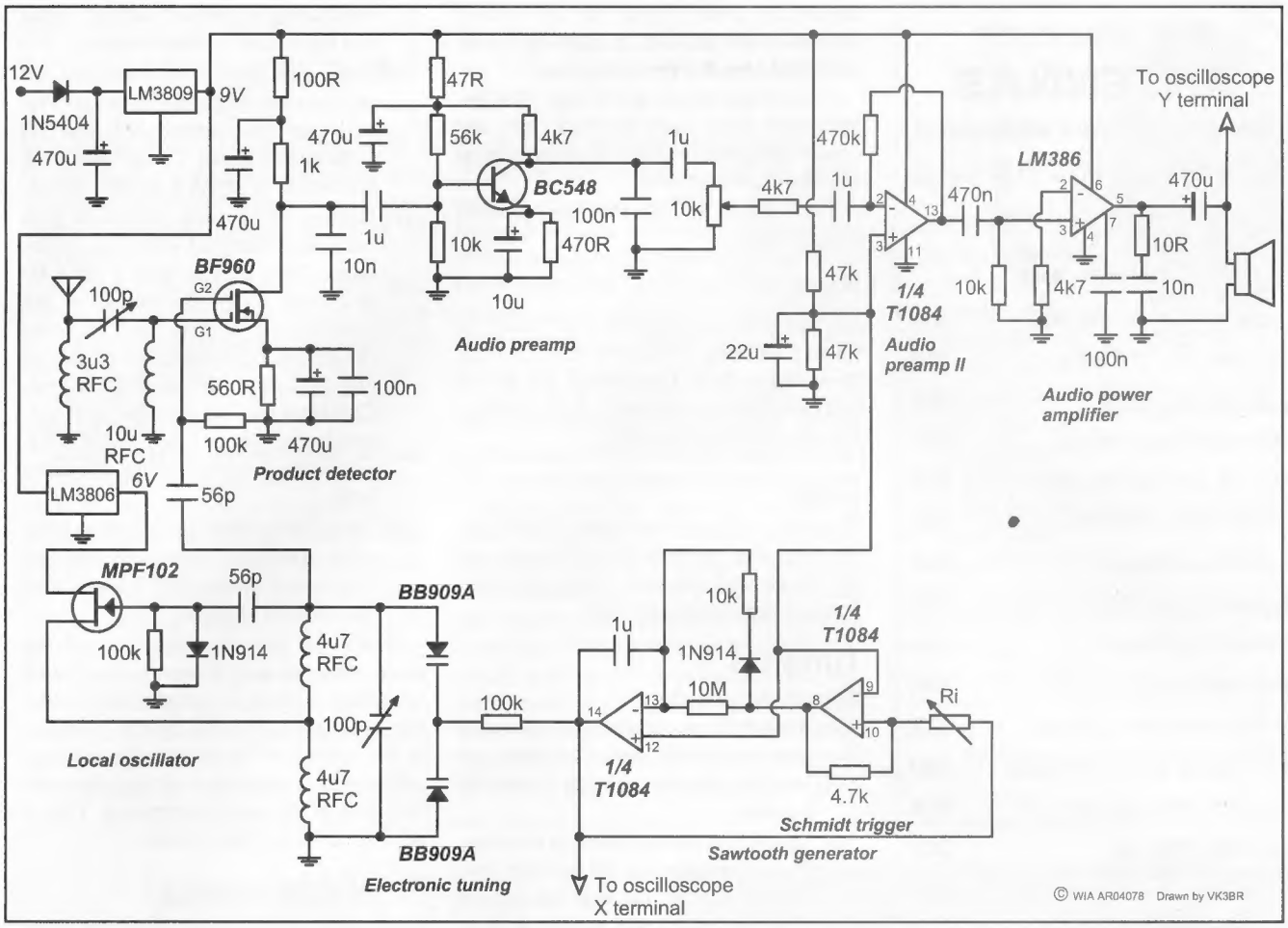
Fig 4

© WIA AR04078_4 Drawn by VK3BR

Fig 4 – Sawtooth generator: block diagram.

below the tap and that above) to be magnetically coupled: it's just like this for convenience; to save having to have two coil forms.

When the two sections are not coupled, then the circuit is equivalent to a Colpitts circuit, although with inductors instead of capacitors. But it oscillates just as well. In the present design, I have used two RF chokes in this "uncoupled" idea to save myself the bother of winding coils.



Schematic of the VK3BBN Automatic Knob Twiddler

The electronic tuning section

The electronic tuning section is just the standard back to back diode idea found in many electronics textbooks. I have used a pair of BB909a's just because they happened to be in the shop, but I don't believe there is anything special about them. I expect almost any diodes, whether intended for variable capacitor service or not, would do.

The sawtooth generator

This is a rather ingenious circuit shown to me many years ago by Associate Professor Arthur Ferguson, and unfortunately I don't know whether to credit him with its invention or if it is someone else's.

It can be broken down into the block diagram of Fig 4.

As the integrator reaches the switching point of the Schmidt trigger, the input to it changes polarity and so does the direction of the ramp.

The purpose of the diode is to make the sawtooth asymmetrical (ie it ramps down much faster than up); if a triangular wave is desired it is left out.

Note that the feedback on the Schmidt trigger op amp is to the + input. This is correct in order to get the hysteresis effect.

The variation in the output is set by the sensitivity of the Schmidt trigger; the more sensitive, the smaller the "wiggle". This is set by the trim pot Ri.

Construction

Each builder has his own pet construction method. Mine is to

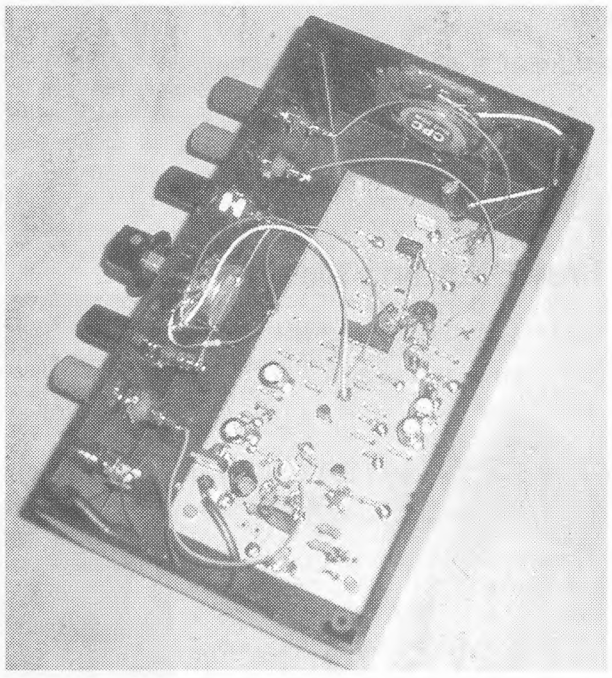


Photo 1 – Inside the case of the Automatic Knob Twiddler showing the component side of the circuit board.

Australian made

ANTENNAS

Setting a new standard

COM-AN-TENA

(formerly a j and j coman)

115 John Street
GLENROY 3046

23 cm 36 ele slot fed yagi beam	$190
2 ele delta loop 10/11 metre	$249
2 ele quad 10/11 metre	$249
10/11 beams comp opt 5 ele	$327
10/11 5/8 vert 4 rad 1/4 wave	$185
Tri band IIB 35 C 10/15/20 m	$745
3 ele 20 m comp opt	$460
log periodic 9 ele 13 30 8.4 boom	$990
MBV 6-12-15-17-20-40-80	$390
40 m linear loaded 2 ele beam	$595
M B Vert auto switch 10/80 m	$330
6 m 7 ele yagi beam 60 mm boom	$387
6 m 5 ele comptr opt beam	$275
Top loaded 160 m vert	$430
10 ele high gain 2 m 3.9 m boom	$149
17 ele high gain 70 cm 3m boom	$129
Rotable dipole 40 m	$250
80 m top loaded vertical	$239
dual band 2 m & 70 vert	$140

Guyed Masts

21 metres **13 metres**

Winch-up & tilt-over. Aluminium and stainless steel three-sided construction. Auto-brake winches.

Free Standing Masts

9.5 metres

New Baluns

1-1 to 16-1 to 3kW

03 9773 3271

Mob: 0419 542 437

assemble everything on an etched double-sided printed circuit board, with the topside just a ground plane.

I find I can never get it right first go, so rather than make another one, out come the tinsnips and a bit of rats' nest construction above it.

Then put it in a (in this case plastic) bought box.

Parts

All the parts should be fairly easy to obtain except possibly the BF960. However, as far as I am aware, it is still in full production. I got mine from Rockby Electronics (Melbourne).

Cost

The cost of the entire project including the box, the printed circuit board and all plugs and sockets, using all new components is around $60.

Tune up

To tune the circuit up:

(i) Switch it on, make sure nothing gets overly hot, and that there are healthy noises coming from the speaker.

(ii) Check that the oscillator is working. Tune the trim-pot Ri so that it is short circuited (so that the output of the sawtooth will vary as little as possible), and try and pick it up on the station receiver.

(iii) Tune it to the right frequency. Wait half an hour or so for it all to stabilise. Turn the station receiver to the middle of the band of interest (in this case 7015 kHz, being in the middle of the band 7000-7030 kHz) and very gently adjust the oscillator trimmer (you will find the tuning extremely sharp!) until the oscillator is heard again.

(iv) Peak the front-end trimmer for maximum signal. It might be necessary to alternate (iii) and (iv) a couple of times. Use a "tweaking screwdriver" with a plastic shank.

(v) Expand the tuning so that it goes back and forward over the entire band. Very gently, and a little bit at a time move the tuning of the receiver up a little and increase the setting of Ri, until the oscillator can be heard "whooping" across. Continue this procedure until you reach the band edge, 7030 kHz, or maybe a little further, for good luck.

(vi) Tune the receiver to the other band edge, 7000 kHz, and check that you can hear it whooping there. If not, increase Ri slightly.

That's all. You can now turn off the main receiver and listen to the "knob twiddler" If there is a signal within the band segment, you will hear a "whoop" as the tuning of the set sweeps across.

You can also connect an oscilloscope and look at the band occupancy. This is shown on one of the photos.

Final comments

I should be very interested to hear from readers who have tried building this circuit or who have any other comments. Write to me at GPO Box 789, Melbourne, 3001.

Reference:

[1] De Maw, Doug, "W1FB's QRP notebook", ARRL, 1991, p 72 and p 70.

ar

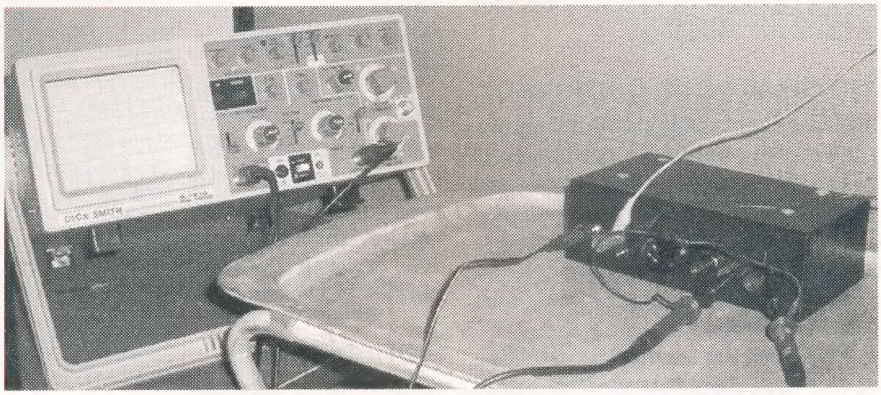


Photo 2 – The Automatic Knob Twiddler in operation connected to an oscilloscope.

Silent key

Jack Henry Bell

Jack Henry Bell was born 7 March 1914 in Narrandera in country NSW. Jack was a remarkable fellow who led a full and active life achieving excellence in all that he did.

He began working life as a Postal Clerk delivering mail to the locals including a young Marie Bashir, (now Her Excellency Professor Marie Bashir, Governor of NSW), and went on to become Post Master.

Jack Bellwas the operator of an original AX Amateur callsign when he was a PMG Radio Inspector in Melbourne. Both Jack and his brother Francis (Now retired Father Frank Bell of Narrandera) had a strong interest in Morse Code and became original foundation members of the "Morsecodians" along with current President Gordon Hill of Sydney.

He operated a few callsigns under the original AX scheme but we do not know any specific calls.

Following his role with the PMG he did hold an amateur licence again

During WWII Jack was refused active service on all 3 times he volunteered because of his essential service and ability with Morse Code. He was involved with essential, official, and secret communications for the Australian Government as a Senior Signals Officer for the duration of the war..

Sadly Jack and his colleagues have not been formally recognised by the Australian Government for their essential service to their country during the war.

Having lived in several locations in NSW Vic and Tas, Jack gained a reputation as a problem solver and his prowess with the Morse key and flair for book-keeping led him to join AustralianMercantile Land and Finance Company (AML&F) with whom he worked until his retirement in Armidale NSW. AML&F were Australia's largest stock and station agents who were eventually taken over by Elders IXL in 1982 after more then 100 years continual trade. JackBellwas of declining health but enjoyed listening to the radio right up to his sudden but peaceful passing in the company of all his immediate family at Strath-Lea Nursing Home Armidale on 30 August 2005.

Jack Bell as a young man working for the PMG.

He is survived by his wife Pauline (Nee Bourke) their 3 daughters and several grandchildren and great grandchildren including grandson Phil Wright (former commercial radio broadcaster and journalist) ex VK2YPW and current operator of VK4YPW.

Submitted by Phil Wright VK4YPW

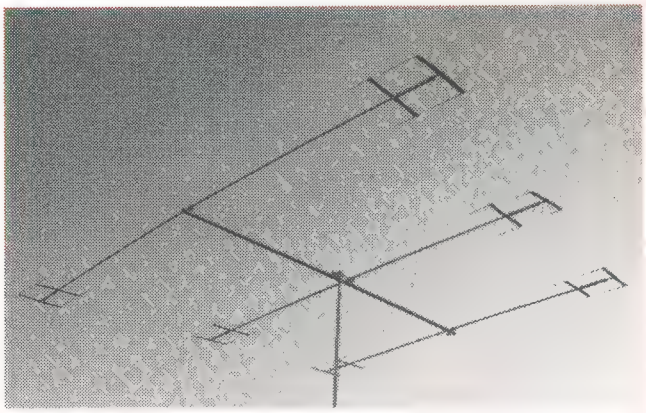
TET-EMTRON

NEW!

TE-33M THREE ELEMENT TRI-BAND MINI BEAM

If you haven't got the room for a full size three element beam, but you want more gain than the two element TE-23M, then this is for you.

SPECIFICATIONS	
FREQUENCY	14, 21, 28 MHZ BAND
MAX.ELEMENT LENGTH	5520 MM
BOOM LENGTH	4.0 M
GAIN	6 / 6 / 7 DBI
FRONT TO BACK RATIO	20/ 15/ 14 DB
FEED IMPEDANCE	50 OHM
TURNING RADIUS	3.74 M
WEIGHT	12 KG
POWER RATING	2 KW PEP



*ALL 6000 SERIES ALUMINIUM CONSTRUCTION.
*ALL STAINLESS STEEL HARDWARE.
*2 KW PEP POWER RATING.
*3.74 METER TURNING RADIUS.

RECOMMENDED RETAIL PRICE
ONLY $858 INCL. GST

If you already have a TE-23M, you can purchase the extension kit containing extra boom, director element, and everything you need to upgrade to this antenna.

Complete kit: $255 incl. GST.

See Website www.tet-emtron.com for dealer list.

RAWMAR ENTERPRISES
40 Blackburn Street,
STRATFORD.
Victoria. Australia. 3862
Ph: 61 3 5145 6179
Fax:61 3 5145 6821
Email: rawmar@hotkey.net.au
ABN: 87404541761

The development of radios in the Flying Doctor Service

Part 3: Continued development and the Morse typewriter

Rodney Champness VK3UG

Traeger now had a reliable pedal radio, but there was one problem he could not overcome: the abominable standard of the Morse code from some outstations. However, he could have made it easier for these operators to send reasonable Morse by fitting side-tone to the transmitters like those fitted to most amateur transmitters that have a Morse code facility.

The sidetone oscillator would have involved using another low power valve, using slightly more current, with a little more circuit complexity, but may have saved the Cloncurry operator from having to ask for so many repeats. Even if this had been developed, some operators skills were so poor that even sidetone would have been of no help to them.

Traeger's fertile mind came up with the brilliant Morse code typewriter. The typewriter was connected across the Morse key terminals of the transmitter. To operate, the message was typed as you would on a typewriter or computer. The Morse code symbol, for whatever letter was pressed, was then sent out in perfect Morse code at around 10 words per minute. Due to a mechanical interlock, it was possible to press only one key at a time, which prevented sending garbled Morse code. The speed of the Morse code was regulated via an oil filled dashpot, which could be adjusted to vary the sending speed. The keyboard was similar in layout to the typewriter keyboard, with modifications to suit Morse code communications.

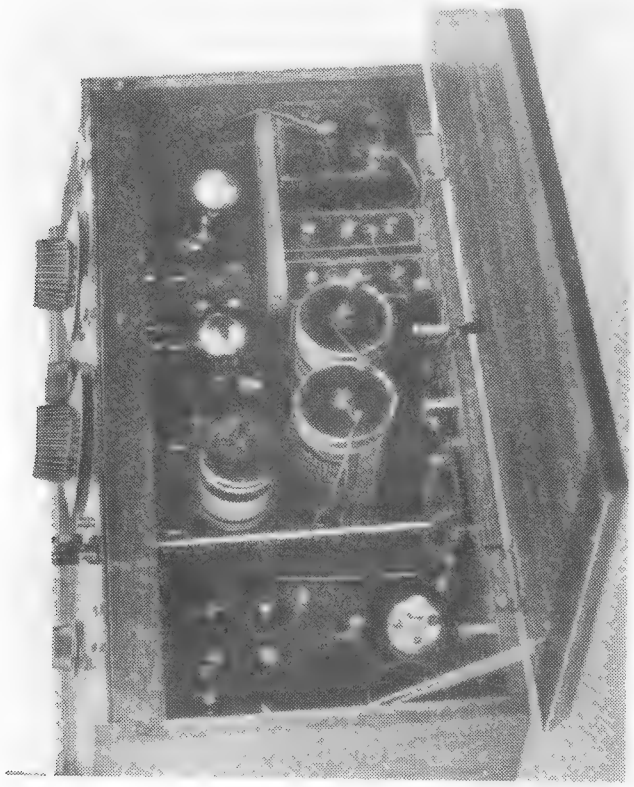


Photo 2. Inside view of the original "Pedal Radio", November 1928. Note the Tx valve missing at the bottom left.

The base station operator (Maurie Anderson) at Cloncurry must have thought his Christmases had all come at once with the advent of the Morse typewriter in 1931. The development of this Morse typewriter could be considered the communications computer of the 1930s. It is a very complex mechanical device, and if you are let near one DON'T pull it to pieces to service it - you may not get it back together again. This is the most innovative device that Traeger ever made. It shows sheer brilliance. There were 50 or 70 of these devices made, depending on the text that you read.

Improved Morse Code transceivers

Traeger designed and built various models of pedal radio, trying out different designs to improve the performance. One sub model did away with the dual transmitter as the single transmitter had proved sufficiently reliable. However, he improved the transmitter by arranging all the tuned circuits and the crystal for each frequency onto one large plug-in module. The counterpoise controls were retained in the transmitter, not on the plug-in module. To change frequency, this involved unplugging one module and replacing it with a module intended for the next frequency to be used. There was a difference in how the modules were wired, however. They were wired onto an eight pin plug and socket arrangement. Only six of the eight pins were used in each plug-in assembly. Three of the pins were used for the counterpoises, and a different pin was used depending on which frequency band was being used so that the correct counterpoise could automatically be connected on the socket in the transmitter.

Another model (34) used the same circuit as the 1930 model but the valves were changed. The receiver was equipped with three 30 valves, while the transmitter was equipped with two transmitters using the 33 tetrode valves. A set of this model is on display at the

RFDS base station museum at Alice Springs.

Another challenge was given to Traeger in 1933, the building of a completely portable transceiver. Padre Kingsley "Skipper" Partridge asked Traeger if he could build a unit that he could use while on patrol. It must do all that other homestead sets would do but be more robust and be capable of being slung across the back of a camel or a horse.

This was a formidable task for those times, just as had been the task of building the first pedal radio six years before. He had to "miniaturise" the set and put all the batteries, headphones, Morse key, aerial and counterpoise cables, transmitter and receiver coils, and the pedal generator pedals into the case. Traeger did some lateral thinking and decided that the radio could be built into two boxes, one that contained the set, and the other that stored or held the other items which completed the station, such as the pedal generator.

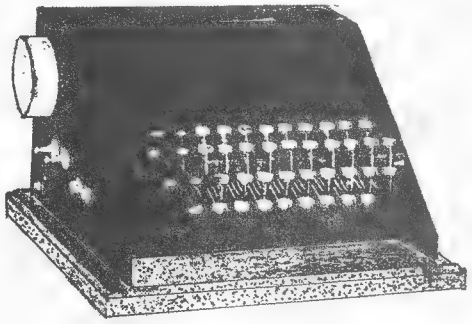
This was a purely Morse code transmitter with a receiver capable of both Morse code and voice reception. This was the first of the portable pedal radios. This set is no longer in existence as it appears from all the evidence available that it was replaced with an AM/CW transceiver in either late 1934 or early 1935. This later set appears to be a portable adaptation of model 35 design. It was built with a receiver similar to the 34 set mentioned above, using three A109 valves, but the transmitter has a PH233 (similar to 33) as the RF valve and a PH230 (30) and a 19 as the modulator for voice operation. The modulator was switched off when Morse was being used. This set is on display in "Adelaide House" in Alice Springs.

The advent of voice transmission

Early in the 1930s, better two volt filament battery valves became available for use in receivers. Traeger seized the opportunity to experiment with these valves for voice transmission. The 33 or variants of this valve became available in limited quantities in 1932. Experimentation proved that these valves were quite suitable for using in the transmitter RF output, and transmitters using them proved easier to tune compared to the earlier sets using triodes.

Valves suitable for audio use, which could be used as a modulator of the transmitter took a bit more finding. The 19 became available in reasonable quantities in 1934 and Traeger was able to experiment with them. The 19 was being used as the class "B" push-pull audio output valve for battery receivers. They were capable of over two watts with a high tension of 135 volts (design maximum). Traeger tried them with 180 volts and found that they worked quite satisfactorily as a push-pull class "B" modulator. However, the 19 was being considerably overloaded, drawing 20 milliamps standing current compared to 10 milliamps with only 135 volts on the plates. The transmitter valves had a relatively short life considering the fact that they were overloaded. While voice transmission was well catered for, no side tone was provided for Morse code operation. In fact none of Traeger's pedal

"Traeger"
Keyboard Telegraph Transmitters



SPECIFICATION.

Keyboard : Arranged in same order as a standard 4-gang typewriter keyboard with extra keys representing the principal signs used in wireless communication.

Case : Made of metal, strongly braced, and securely fastened to a baseboard of Pacific maple.

Contacts : Readily accessible for cleaning and adjustment and enclosed in a dustproof cover.

Speed Control : By means of a simple oil dashpot with speed-adjusting screw easily accessible.

Guarantee : Should any machines be found defective within one year of purchase they will be repaired free of charge, provided all freight charges are paid to and from the factory.

PRICE :

SHIPPING SPECIFICATIONS.

Weight { *Nett* 16 lbs. / *Gross* 30 lbs.

VOLUME—2 cub. ft.

Fig 4. An advertisement for the Morse typewriters.

radios with Morse capability ever had the sidetone facility.

The transmitter was capable of both operations so if radio conditions were poor, the out-station operators could switch from voice to Morse code.

The model 36 appeared during late 1935 or early 1936. The transmitter remained the same as the model 35. The receiver was considerably upgraded and became a much better performing set that was easier to operate. The RF stage was an RF tetrode type 32 with an untuned input. The regenerative detector also used a 32. The set only used one tuned circuit, and the receiver was able to tune from 550 kHz to around 10 MHz by using plug in coils. On the higher frequency ranges, a fixed capacitor was included in series with the tuning capacitor to band spread the tuning. This eased the task of tuning the receiver. The first audio stage was a 30 triode, which either fed an audio transformer coupled to a triode connected 49 valve and a loudspeaker, or a set of headphones. This receiver was a low battery drain variation of an ARRL design that appeared in QST for April 1929.

The advent of voice transmissions meant that the operators at various homesteads and out-stations could hear each other's voices for the first time. They wanted to talk to each other to overcome the loneliness. They chatted about things of interest to them, whether it be how the cattle were going or how the dressmaking was progressing. This informal chat session became universally known as the "Galah Session"!

With the improved out-station sets in use, perceptive people with innovative ideas saw that they could be put to other uses. On September 20th, 1950 the first experimental School of the Air program took place from the Alice Springs Flying Doctor Service (FDS) base. This was the brainchild of Miss Adelaide Meithke a retired inspector of Girls Schools in South Australia

Another more secret activity occurred around this time too. One gentleman and his lady friend conducted their courtship over the pedal radio. So that other users didn't know what was going on, their courtship was conducted via Morse code. If other out-station operators had realised that the courtship was taking place they would have learnt Morse receiving, not just sending!

Of course there was at least one third party who could easily read the Morse traffic and that was the base operator. However, base operators signed a Declaration of Secrecy, which forbade them to disclose the contents of transmissions that were not intended for their base station. However, the base operator would have occasionally checked to see that any "strange" signals were not from unlicensed stations!

The first superhet transceivers

Traeger was gradually developing additional models of pedal radios. In 1937 Traeger had the model 37 operating. This was in an all metal case, and was starting to look professional, whereas all previous sets looked very much like home constructed sets.

The 37 was the first set with a superhet receiver. The receiver used four 2 volt battery valves. It had a converter, one IF stage, a grid detector audio stage and an output stage with facilities for use of a speaker or a pair of headphones. The gain of the receiver was controlled by varying the screen voltage of the IF stage. It had no AGC. The band changing for both the transmitter and the receiver was by front panel switches as fitted to domestic multi-band receivers.

The transmitter had three plug-in transmitter modules selected by a switch. Should a set require to be fitted with a new frequency, Traeger had a module made and pre-tuned for the new frequency. It was then sent to the outback station and it could be expected to work once plugged into the transmitter. The only things at the out-station radio requiring adjustment after fitting the module were the length of the particular counterpoise (not always necessary if the frequency change was small) and the counterpoise tuning control. In some circumstances the antenna may have needed alteration.

The next step Traeger took was to provide a 6 volt vibrator power pack for the 37 set, which became the 37A. The days of the pedal generator were now numbered. The name "Pedal Radio" persisted for many years even when no pedal generator powered transmitter was still in use.

Further advances

Regrettably, the pedal radio transmitters were still quite low powered with around 1.5 watts output. It was quite low as the efficiency of small battery valves on HF is only around 40% in class C operation which is much lower than the 65 to 75% efficiency obtained from small transmitter type valves like the 807 or the 80 to 85% expected of large transmitting valves like the 4CV100,00E.

In the 1940s, the voltage from the vibrator power supplies was increased to around 240 volts, which really gave the valves a hard time. The transmitters had outputs of up to 3 watts - but with very reduced valve life.

Then around the time of the end of WWII, the first homestead station with a reasonable output was produced. It was the 45A20 that had an output power of around 20 watts from an 807. The modulator used a pair of 807s in push-pull. The reception between base and out-stations and between out-stations improved markedly and made using the flying doctor radio ("pedal radio") so much more enjoyable. These sets operated off a 12 volt vibrator pack and the transmitter valves were mostly 6.3 volt heater types, while the receiver still used 2 volt battery valves. The use of the battery valves enabled lengthy listening times without flattening the battery. The AC valves were more suitable in the transmitter as higher output power could be obtained and they were more efficient. As they were only used for relatively short periods, the much higher power usage was of no great importance.

With the improved out-station sets in use, perceptive people with innovative ideas saw that they could be put to other uses. On September 20th, 1950 the first experimental School of the Air program took place from the Alice Springs Flying Doctor Service (FDS) base. This was the brainchild of Miss Adelaide Meithke a retired inspector of Girls Schools in South Australia. The technical work was all done by Graham Pitts (VK6GF), the Alice Springs FDS base director. The experimental broadcasts proved that such a system would work, and it was officially implemented in 1951.

Many other activities and technical advances have taken place since then, with hybrid and then transistorised AM equipment, single side band (SSB), and

Fuses
or *how to get a smaller bang for your buck!*

Clive Wallis VK6CSW

A device used to detonate an explosive charge is called a fuse. In our hobby its namesake is a device used to protect electrical circuits. Not everyone seems to appreciate that the wrong choice of electrical fuse may lead to the "detonation" of the device it is supposed to protect! Electrical fuse technology is complex; fuse manufacturers' manuals are substantial documents. This article sets out a few thoughts on fuses and why the odd bit of wire will not do.

The electrical fuse is an expendable item that eliminates overload of a circuit. Use one with the wrong characteristics and you could find that the circuit is eliminated to save the fuse! I make no claim to be an authority on the subject but what follows has been gleaned from several reliable sources including the Standard Handbook for Electrical Engineers, 1987.

The role of the fuse is two-fold:

It should protect both the device being powered and the source of that power. The major electrical considerations in the choice of a fuse are source voltage and impedance, current required by the load, maximum current to be interrupted, and time needed to interrupt and clear the fault without equipment damage.

Fuses come in many shapes and sizes:

Rewireable, bolt-in, cartridge, glass or ceramic tube, for example. The rewireable type is found in older household AC mains fuse-boxes; here the likely option is to replace a blown fuse with the correct wire element, (although you can now obtain a re-settable plug-in circuit breaker). Bolt-in, large cartridge and tube types are generally confined to industrial applications and may be filled with air, sand, or a special filler such as boric acid or bone-fibre, etc. Such a sealed "company-fuse" (probably rated at 60 to 80 amps on a single phase inlet) can be found lurking near your electricity meter, but you interfere with it at your peril! Here we will concentrate mainly on the small glass or ceramic clip-in type found in amateur and domestic appliances, e.g., the 3AG (6.3 x 32 mm), M205 (5 x 20 mm), and similar.

What causes a fuse to blow?

Over-voltage, over-current, or overheating? Since the fuse melts, the last choice is clearly the correct one and occurs because the fuse element has a small but finite resistance. When too large a current flows, this resistance multiplied by the square of the current creates sufficient local heat to melt the fuse and interrupt the power. The essential requirement is that the fuse melts before the circuit elements do! The manner in which the melting occurs is important.

Except for rewireable fuses, which use tinned copper wire, fuse elements are generally silver strip or wire shaped to give the desired fusing characteristics. As the element melts an electric arc is formed and current continues to flow until this arc is extinguished, hence the "interruption time" is the sum of the melting and arcing times and is inversely proportional to the current. Where sand or another filler is used its purpose is to absorb the heat of the post-fusing arc thereby speedily extinguishing this arc in a controlled fashion. A blackened glass fuse cartridge indicates that ionisation of the air within the cartridge has occurred as a result of a prolonged and very hot arc. During the period of arcing and ionisation, current continues to flow and the fuse fails to interrupt the fault current. Such blackening should not occur if the fuse is of the correct type. Fuses can carry their rated current continuously; fusing or melting starts at around twice the rated current. Current carrying capacity is generally specified at 25 deg C; if the ambient temperature is higher then the fuse should be derated. To prevent nuisance blowing yet still have adequate protection, a fuse rated at 125% of the normal current is often specified.

Fuses are rated by current, voltage, and operating time or "delay"

Current ratings range from a few milliamps to many thousands of amps, while voltage ratings go from 32 to 600 for the common 3AG and similar types - and hundreds of thousands for special industrial types. Voltage classification depends upon the voltage present across the fuse after interruption. Always ensure that a mains fuse is replaced by

continued next page

The development of radios in the Flying Doctor Service *continued*

many other technological advances. For more in-depth information covering the development of communications (with emphasis on radio) and its use in the outback, from the time of the first settlement to now, I would recommend that you read my book "Outback Radio - from Flynn to Satellites".

The research for the book has taken me over six years, travelling through the outback and talking with those few left who know what happened, plus reading many manuscripts and books on the subject, and building and testing replicas of the transmitters. I was fortunate to have had time with the late Reverend Fred McKay who worked with Rev. John Flynn and was a padre with the Australian Inland Mission (AIM). He opened many doors to assist me in my research. Mervyn Eunson (VK4SO) had done extensive research over many years on the flying doctor service radio communications and was also of great assistance. Graham Pitts (VK6GF) was base director at the Alice Springs Flying Doctor Service base from 1944 to 1953 and then Port Augusta until he retired in 1987 (a total of 43 years with the Central Section of the RFDS). He has provided me with a considerable amount of very valuable information. Without the help of each of these people, my book and these articles would not have been able to be written with accuracy.

a correctly rated one, not a 32 volt type. Most high-grade manufacturers stamp the voltage, current, and delay ratings on one metal end-cap though others use a code. To further confuse the issue there are three main standards used for small cartridge fuses, the American UL (Underwriters' Laboratory) plus the IEC and CEE standards found mainly in Europe and Asia. Because the detail of the standards varies, it is wise to always use a fuse identical to the original if at all possible.

Fuses must be able to safely interrupt the highest fault current which could be present at the rated voltage. The impedance of a standard 240 volt AC outlet may be as low as 0.1 ohm, in which case a dead short across it could result in an instantaneous fault current flow of 3400 amps - which can cause a very expensive bang. (Nominal mains voltage is 240 AC, hence peak voltage is 240 x 1.414 = 340; 340 V across 0.1 ohm = 3400 amps). Fuses come in two basic formats, the HRC (high rupture capacity) and LBC (low breaking capacity), and the 3AG type is no exception. Some HRC versions can clear a fault current of up to 10,000 amps whereas the LBC is rated at 10 times the nominal fusing current. (Here again, exact specifications vary with the manufacturing standard). That is, a 2 amp LBC type will safely interrupt no more than 20 amps. Superficially, the 3AG HRC and LBC fuses look much the same, but clearly the HRC type MUST be used where mains inputs are concerned.

Fusing speed is important and depends upon the nature of the required protection. Transistors and thyristors (three legged fuses?!) blow very quickly and require that the protective fuse blow even faster. Quick-blow types can act within half a cycle at mains frequency. On the other hand, motors, transformers, and capacitor input circuits pass heavy initial (inrush) currents and require slow-blow fuse protection. For example, the starting current of an induction motor may be three to eight times the rated running current. Repeated starts should not melt the fuse but the same fuse must give protection against internal shorts or over-current due to seizure or stalling. Placing a blob of solder in the centre of the silver fuse element increases the thermal capacity of the element sufficiently to withstand brief starting overloads, but a sustained overload melts the solder and dissolves the silver. One type of quick-blow fuse uses a specially shaped element designed to speed fusing by concentrating the heat in a small area. Some fuse elements have a coil-spring winding around part of the element; these are slow-blow types. Different applications require different fuse characteristics. A perusal of manufacturers' charts reveals a surprising variety of fuses available, many of which look outwardly similar.

In general terms, the fastest acting fuse is type FF (super quick) suited to thyristor circuits, while the standard quick acting fuse is rated F (normal blow). Type M has a medium fusing time and can handle small current surges, while type T is the standard slow-blow fuse. Type TT is a very slow acting fuse. Where no letter prefix is shown, such as 2A/250V the fuse may be assumed to be a normal quick-acting type. Where no voltage rating is shown, a fuse purchased locally may be assumed to have a 250V rating. As mentioned above, some fuses without a marked speed rating have a small spring or a solder blob on the wire; these are slow-blow types.

Fuse-holders should also be rated according to their design purpose and always make sure that the contacts hold the fuse tightly. A little unwanted resistance here plus a high current flow can lead to high temperatures and ultimate mechanical failure of the clip.

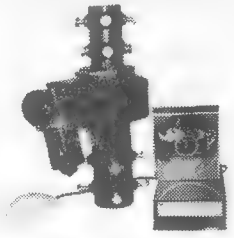
Because a fuse has some resistance, when a current flows through it heat is generated. The fuse element used in glass fuses usually has a positive temperature coefficient, which may make de-rating necessary to allow for the temperature rise. It also means that a fuse can suffer from thermal fatigue and may simply die of old age even though no equipment fault exists. Similarly, fuses have an "amps-squared-seconds" rating which is a measure of how much energy the fuse can pass and thus how much stress may be placed on the protected circuit before the fuse ruptures.

As well as fuses designed to protect against excessive current; there is also the thermal fuse to protect against excessive heat. These fuses are found in fan-heaters, hair-dryers, toasters, etc. and are designed to fail at a pre-set temperature. Replacement must always be by one of identical rating and it must also be positioned correctly to sense the heat. Just like glass fuses, they all look very much alike but have widely different characteristics. An improperly rated thermal fuse may cause a serious fire. Larger mains transformers often have a thermal fuse incorporated within the primary winding to protect against excessive temperature rise due to prolonged overload. Usually there is no economic way to replace this fusible link.

Quality fuses manufactured to UL, IEC, or CEE standards are required to show rated voltage, rated current, time delay characteristic, and the manufacturer's name or trade-mark. That being so, one can only wonder at the quality of many fuses sold at local outlets.

This article is not intended to be a comprehensive treatise on fuses If it makes you think twice about what sort of fuse you should use next time the need arises, then it has achieved its aim. Where possible, be guided by the equipment manufacturer's advice - he probably had good reason for choosing a particular type of fuse, and a fracto-buck spent on the right fuse could save mega-bucks on repair bills!

OzSpid Rotators



Oceania - New Zealand - Australian Distributors.
Australian Enterprise Industrial
P.O. Box 1013
Browns Plains. QLD. 4118.
Ph. 0414 254 080.
Fax. 07 3800 8003.
aeitower@spin.net.au

Radiated power

Bill Isdale VK4TWI

We commonly measure power, often against some fairly arbitrary yardstick such as the rated output of a transmitter. Many high frequency radios these days are rated at 100 watts output, not because that is inherently good but just because it is what the market is looking for. Manufacturers presently deliver 100 watts as it represents the sweet spot at which consumers can be persuaded to open their wallets and buy the product.

Over time there will probably be the usual trend of bigger is better and manufacturers are likely to find that the demand for more power is there, as long as the price is not too steep. It isn't technically difficult to increase output power in a radio, it just increases cost, size and input power demand. But where is the power going?

Looking at a recently designed transmitter, we see an output of 100 watts and a need for 22 amps at about 13 volts to obtain that. Looked at overall, the transmitter can be viewed as a resistance and power calculated as the product of voltage in volts and current in amperes. The formula is P = E x I. It follows that, input power for the example is 13 x 22 = 286 watts. That is what needs to be coming into the radio in order for it to deliver 100 watts of radio frequency power at its output terminals. Where is the other 186 watts? It has been dissipated as heat and a careful touch of the heat sink will tell you just where it is going, out to warm up the world. Radio amateurs cause global warming; just keep quiet about that.

One thing is certain, we can't do anything about the heat loss in the radio, because some must inevitably result from the current flows and resistances in the device. The bright side of this is that we still get our 100 watts output and the power supply simply puts the energy into the radio as required. We can easily overcome the loss by pouring more power in from our power supply. We are not being wasteful as the overall loss in the radio is the least that modern engineering can make it.

From the output terminals of the radio, the loss is much more within our control, subject to practical constraints that will probably mandate some compromises. The transmission line to our antenna will have some loss. In a transmission line which ends at an antenna presenting a pure resistance equal in value to the characteristic impedance of the line there won't be any voltage and current variations on the line, and no standing waves, so there will be very little loss of signal energy as it is not reflecting back and forwards within the line, piling up into standing or stationery waves. There will be some loss due to resistance in the copper, but with a line that has big conductors and is as short as possible, the loss will be minimised.

This is all great in theory, but in practice it soon goes awry. If we use an antenna, such as a dipole, then it will present a 72 ohm impedance if it is perfectly situated, giving a standing wave ratio of 72 divided by 50, or about 1.4. That is quite good and our transmitter and feed line, optimised for a 50 ohm working load, will still perform well.

If we are using a quarter wave vertical then, if it is sitting on a perfect artificial ground plane, it should present a 36 ohm load, half that of its bigger brother the dipole.

In most situations there will be some practical constraint that interferes with the ability of the antenna to radiate as it would in theory. Often there will be some nearby tree or structure or it will not be possible to raise the antenna as high as we would wish in order to get it clear of the influence of the ground.

The efficiency of our antenna will be reduced by proximity to the ground or objects that will unfortunately become a part of the total antenna system, a part that operates adversely and is acting as an air cooled dummy load.

I am not going to discuss trees or houses other than to say that they may be useful supports and that the direction of radiation should be as far from them as possible. For instance, a dipole would do much better if you ran it from a tree to a pole than if it is run beside a tree which will absorb some of its radiation.

What I am going to discuss is radiation efficiency as it relates to the ground below an antenna. The ground will partly absorb radiated energy rather than perfectly reflect it and ought to be considered in calculating the efficiency of an antenna system. The percentage efficiency of an antenna is calculated by:

Photo 1 – A simple antenna for 70 cm. Photo by James Isdale

Efficiency % = 100 Rr/(Rr+RL)

Rr is the radiation resistance of the antenna itself and RL is the loss resistance of the ground. To illustrate, suppose a quarter wave vertical antenna has a 36 ohm Rr and the ground has a 150 ohm RL, then antenna efficiency is:

100 x 36/(36 + 150)
100 x 36/186
100 x 0.19
19%

This is not encouraging. 100 watts,

OZGEAR

Ozhelp Services

Doug Hunter VK4ADC
Brisbane
Ph **07 3114 2506**
Fax **07 3114 2002**
sales@ozgear.com.au

ICOM
YAESU
KENWOOD

Try us for the full range of :
- **HF Transceivers**
- **VHF & UHF Transceivers**
- **Receivers**
- **Accessories**

which are...
Australian sourced – with Australian warranties...

We are the sole Australasian source for ***Tigertronics*** *radio interface products.*

Plus... **OzGear** products including balun kits, cables and antennas, **Diamond** HF, VHF & UHF antennas & accessories, **MFJ & LDG** tuners, **Autek** antenna measurement, **Daiwa** cross-pointer SWR meters, **RFI, Mobile One, GME, Scalar & TET** Antennas, Coax connectors, cables and hardware from **Andrews, RFI & Benelec, Sangean** receivers, **GeoSensory GPS** units, **ARRL publications** and a growing range of **ELECTRONIC COMPONENTS**...

With... More items and brands available and new products being listed all of the time...

Product not listed above ?
Phone or email to see if we can help or visit us on the web at
http://www.OzGear.com.au
for the latest product info plus on-line ordering. Our latest price list can be downloaded in PDF format from the site at any time.

if delivered intact to the antenna, will result in 19 watts radiated and 81 watts applied to warming up the ground.

These figures have assumed that the loss resistance of the ground is 150 ohms. Unfortunately, this is not an unrealistic value. Fine sandy soil will typically have an average resistivity of between 80 and 300 ohms per metre. Clayey gravel will average 200 to 400 and silty sand 100 to 800. Gravelly clays will average 20 to 60 and well graded gravel can be 600 to 1000 ohms per metre.

The radiation resistance appears in series with the loss resistance. The artificial ground provided by some copper wire radials offers very high efficiency in itself but the overall antenna efficiency will be dragged down by the influence of poorly conductive ground. An antenna that is close to poorly conductive ground is going to radiate a severely diminished signal. One remedy is to elevate the antenna a quarter wave above the ground to effectively eliminate its influence.

The fact that radiation resistance and loss resistance are in series offers another way to get improved results. If the antenna has a large radiation resistance in relation to the loss resistance it will operate more efficiently.

Consider the half wave vertical antenna. These are sometimes rather loosely referred to as being ground independent. This is a little misleading as what is really going on is that the radiation resistance of the antenna element itself is so high that the additional component from the ground is a small proportion of the total resistance and so does not drag the efficiency down very much. Over a perfectly conducting ground this antenna will have a radiation resistance of 1000 ohms. Applying the formula to determine its efficiency when on a ground with 150 ohms per metre resistance gives this result:

Efficiency % = 100 x 1000/(1000 + 150)
= 100 x 1000/1150
= 100 x 0.8695
= 87%

This is a much better result. It is a whole lot better than the 19% of the quarter wave vertical on the same ground plus it has double the physical size and therefore double the capture area to receive signals.

To take a different example, if a quarter wave vertical has a three or four radial ground plane of quarter wavelength radials angled down 45 degrees below the horizontal so as to increase its impedance to 50 ohms, and is elevated at least a quarter wavelength above the ground so that the artificial ground is fully effective, then the efficiency of that antenna would be:

100 x 50/(50 + 0.1)
= 100 x 50/50.1
= 100 x 0.998
= 99.8%

For the purposes of illustration I have chosen a value for resistance of the ground plane that is perhaps a little high but will be approximately correct - copper wire is an excellent conductor. The actual value will depend on the length and gauge of the copper wires used for the artificial ground as well as their number. For present purposes it is not necessary to work it out exactly. The point is that, over average ground, a dipole will radiate less efficiently than a half wave vertical or a quarter wave ground plane antenna which, by its design, avoids the real ground and substitutes an electrically good one.

Applying the efficiency calculation to a ground with low average resistivity such as clay, where about 30 ohms per metre could be achieved, yields the following for a dipole with the expected Rr of 72 ohms:

Efficiency % = 100 x 72/ (72 + 30)
= 100 x 72/102
= 100 x 0.70
= 70%

The same dipole over 150 ohm ground would be:

= 100 x 72/(72 + 150)
= 100 x 72/222
= 100 x 0.32
= 32%

If the ground under the dipole is somewhere in the middle of the figures that I have used, which is probably typical, then it may be expected to be 50% efficient. The remainder of the energy fed to the antenna will be lost as heat into the ground. A quick fix would be to water the ground under the dipole in order to improve its conductivity.

Overall, the efficiency of the quarter wave vertical antenna with an artificial ground plane is very attractive. As an alternative, the half wave vertical could be a good choice in some locations as it occupies very little space, although it will need a low loss impedance matching transformer at its feed point. Such a transformer would typically have an expected loss of only 1 to 2%.

The principles we have considered will apply regardless of the frequency for which the antenna has been designed. Naturally, antennas for lower frequencies will be physically larger and a quarter wave ground plane antenna with quarter wave length radials mounted at least a quarter wave length in the air will be a little cumbersome and will become impractical for most locations for frequencies much below about 14 MHz. The half wave vertical, of course, could be a space saving solution for some locations.

None of the antennas we have considered should be initially ruled in or out. What is used will depend on the circumstances at each location, where we must weigh the advantages and disadvantages of different designs to reach the best compromise. The illustration shows a simple antenna for 70 cm, a quarter wave ground plane made from a SO239 panel mount socket costing under $3. The ground plane is made from some copper wire that was on hand and the radiator from copper wire of suitable thickness that would fit into the hollow pin on the connector and so attach easily. The overall height of the radiator is 95% of what would be a quarter wavelength in free space. The small loop at the top is there so that the antenna can be suspended from a thin cord and hauled up as high as possible over a suitable object such as a tree limb.

To make the same thing for frequencies down to 20 metres will be practical in some locations, especially if there is a skyhook in the form of a tree from which to suspend it. The radiator can be hung vertically and the radials made of flexible wire and pulled out to 45 degrees by non conductive cord which is then tied into position by use of a convenient tree limb or even a garden stake into the ground. Keeping the radiator and ground plane elements a quarter wave length clear of anything will maximise the efficiency of the antenna, allowing it to approach the 99% level.

The quarter wave vertical provides a low angle of radiation for good long range performance. The tendency of man-made electrical noise to be vertically polarised, as the electrical field from this antenna is, will be a consideration. Other more positive qualities of this design are high efficiency, very low cost and low visual signature.

A useful attribute of the half wave vertical is that it can be simply constructed of readily available aluminium tube, it does not look like a radio antenna and, if you put the correct flag on it, no-one in the land will be able to successfully object to it.

G&C COMMUNICATIONS
Authorised dealer for Icom YAESU Kenwood Barrett RFDS GME Electrophone Uniden
See us for CAR Stereo too! ~ 'Cranbourne Car Sound'

ICOM (Australia) TRANSCEIVERS

IC-756 Prof III HF + 6M	$5,499
IC-7400 HF +6M +2M	$2,699
IC-706MKIIG HF-70cm	$1,449
IC-718 HF SSB	$999
IC-910H 2M/70cm Multimode	$2,499
IC-2720H 2M + 70cm D/Band	$699
IC-208H 2M + 70cm	$599
IC-2200H 2M H/Power 'NEW'	$499
IC-T90A Tri-Band H/Held	$499
IC-V82 2M @7W H/Held	$379

2 YEAR ICOM(Aust.) Warranty!
★ Full Product Range Available! ★
Full range of Communications/ Scanner Receivers available from Icom, Uniden, Yaesu $ POA

Comet CHA-250B HF Vertical
3.5 ~ 57 MHz $699

Antenna Tuners
MFJ 945E — MFJ949E
The auto MFJ 993

and the amazing
MFJ 902 Travel Tuner

Antenna Rotators
G450A (shown)

G-2800DXC
G-1000DXC
G-800DXA
G-650C
G-450C
G-5500
G-550

TE series EMTRON HF ANTENNAS
Australia wide orders welcome
Credit card Cheque Money order

YAESU Transceivers

FT-1000MP MKV Field	$4,399
FT-1000MP MKV 200W	$4,999
FT-847 HF- 70cm	$2,899
FT-7800R Dualband	$499
FT-8800R Dualband	$699
FT-8900R Quadband	$849
FT-817ND HF- 70cm	$1,199
FT-857D HF- 70cm	$1,449
FT-897D HF- 70cm	$1,599
FT-2800M 2M @ 65W	$349
FT-60R Dualband H/H	$399
VX-1R w/ 2 batteries	$329
VX-2R Tiny Dualband	$349
VX-6R Dual/Band H/Held	$499
VX-7R Tri-Band H/Held	$599
VX-170 2M Rugged H/Held	$279

3 YEAR AUSTRALIAN WARRANTY
Call in and see our range of power supplies, cables and connectors

Comet & Diamond
Antennas & Accessories

Proudly Supporting Australian Business

207 High St. Cranbourne VIC 3977
Ph: 03 5996 3298 Fax: 03 5995 0184
Email: gccomm@bigpond.net.au
www.gccomm.com.au

Working DX 16 metres above the Indian Ocean

Graham Rogers VK6RO

When was the last time you worked DX from a location 16 metres ABOVE the Indian Ocean?

Lionel, VK3NM/VK6DC decided he wanted to do it, so in December 2004 he drove about 3000 km from Melbourne to my home QTH of Perth.

In early January Lionel and I went down to the North Mole at Fremantle, set up his portable setup and we got a taste of DXing from a location about 16 metres directly over the Indian Ocean which is just about a perfect reflector.

Lionel's portable setup includes a 7 metre "Squid Pole" which collapses down to a tube about 1 metre in length, an Icom 706 MK11G and a full size 80 metre dipole [inverted vee configuration] fed with twin feeder via a MFJ tuner.

We set this up on the North Mole that is actually one side of the sea entrance to Fremantle harbour; the feed point was about 16 metres above the Indian Ocean.

There was a strong sea breeze [Freo Doctor we call it] and you can see the pole and feedline bending over the ocean.

We were about 500 or so metres out into the ocean, surrounded by salt water except on the road along the top of the rocks.

A few people who arrived to do some fishing gave us some funny looks and one bloke asked what sort of fishing rod setup we had!

Mentioned Amateur radio and got a blank stare as the response, however a WW2 veteran who was in signals was shocked when we told him we still used morse code, but he understood about H.F. propagation etc, and was interested to hear the beacons from 4S7, JA and others on the 21 MHz beacon frequency.

This location was idyllic from our point of view, all we need to work out is how to get a wire up the top of the small lighthouse at the end of the mole, run it a few hundred metres along over the rocks and tune up!....Magic.

Then there was Lunch, nothing like a homebrew meat pie and can of coke from the Kiosk down the road at the entrance to the mole.

If you see a bloke in the photos wearing a hat, its yours truly, VK6RO

So if you want to enjoy a nice hot pie, can of Coke and the cool Freo Doctor on your face while working DX, wander down to Fremantle.

PS. We call it the Freo Doctor because when its about 42 degrees in Perth, the seabreeze comes in, and makes everybody feel better.

Photos - The lighthouse at the end of the North Mole, plus the antenna etc setup and VK6RO near Lionel's Ute, my Ute in the foreground, top picture.

Green Cape Light 2005

Ken Robertson VK3HKR
Green Cape Lighthouse

A group of three Victorian amateurs travelled up to 700 km to establish Lighthouse 85 at Green Cape, located south of Eden and north of the Victorian border.

Our group consisted of Albert VK3KLB, Gavin VK3VTX and Ken VK3HKR accompanied by their wives.

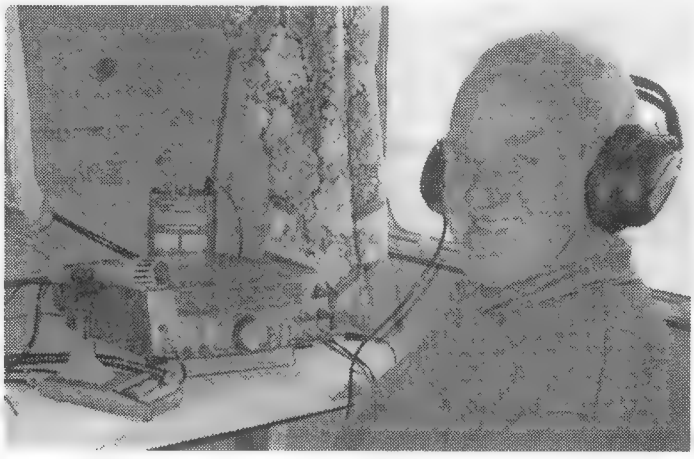
Green Cape is located QF52 at 37 degrees S and 150 degrees E. On arrival we were welcomed by Steve Merson, Ranger for the NSW National Parks and Wild Life Service who was further supported by Craig Dickman from the regional office at Merimbula. These people had organised a caravan for us to operate from at the base of the Lighthouse. Additionally, publicity of the Lighthouse event had been arranged through local ABC Radio and South Coast Radio 2EC.

During the course of the weekend over 150 contacts were made including 19 Australian light stations and four in NZ. A variety of antennae were used but principally a "tripole" on 20 metres proved successful and this was the usual dipole with a vertical section supported from the Lighthouse 29 metres above. A kite antenna was also tried but wind conditions were not favourable. VHF and UHF contacts were rather limited, as the linking process north from the south coast area of NSW was not operational.

An interesting aspect of the Lighthouse is the staircase, which was progressively built into the internal walls of the tower with the result of a very rigid central spine supporting the whole structure. Construction commenced in 1881 and took some two years to complete. Much of the material was imported from England. However, the hard part was transporting this equipment from sea level to the construction site.

Albert VK3KTV left, Gavin VK3VTX right

Our whole mission would not have been so successful without the support of our friends from NSW Parks and Wild Life Service and Kevin VK2CE, Registrar of the Lighthouse Week Program whose efforts are acknowledged.



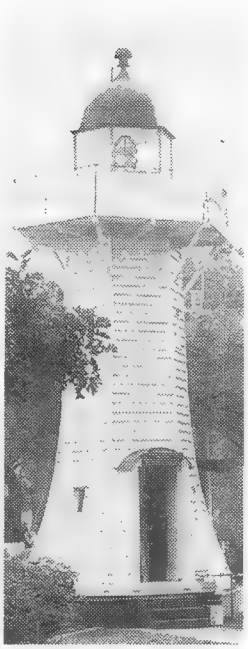
Albert VK3KLV

Gavin VK3VTX

The things we do

The International Lighthouse and Lightship Weekend

Ron Brumley VK4FC



Historic Lighthouse, Lighthouse Park, Burnett Heads

The Association of Lighthouse Keepers holds International Lighthouse Day on the third full weekend in August each year when many Lighthouses around the world will be open to the public. The International Lighthouse Day helps to raise the profile of Lighthouses, Light vessels and other Navigational Aids, promoting the rich aspect of our heritage.

Trusts and "Friends" groups use this day to raise awareness of their work and involvement in the preservation of the history of light keeping and on Sunday 21 August the old lighthouse at Burnett Heads will be open to the public with pictorial history on display.

On this day Amateur Radio Operators all around the World will be transmitting from lighthouses with the objective of fostering international relations, exposing their hobby to the public while focussing on lighthouses and their preservation.

Anske VK4CAB and Rusty VK4JM operating the Bundaberg Amateur Radio Club station VK4BW during the recent International Lighthouse and Lightship weekend. The station was set up adjacent to the historic Burnett Heads Lighthouse (above right and cover)

This annual Amateur Radio event came into being from the Scottish Northern Lighthouse Award Week-end and in the last seven years it has grown to over 370 special events stations being established at participating lighthouses in some 51 countries around the world.

The Bundaberg Amateur Radio Club participated in the recent "International Lighthouse and Lightship Weekend" setting up club station VK4BW alongside the historical Burnett Heads Lighthouse. The lighthouse served at the south head entrance to the Burnett River from 1873 until it was replaced by a modern structure in 1972. It was then relocated for preservation to Lighthouse Park, Burnett Heads. The National Trust of Queensland listed it on the "Register of Significant Places" in 2002.

Rusty VK4JM, Joscelyn VK4JJ, Anske VK4CAB, Ross VK4JRO and Bob VK4UD set up and maintained the site. A Hustler vertical all-band antenna was set up on the top of the lighthouse. Contacts were made with Australian and New Zealand lighthouse stations on 20 and 40 meters, attracting publicity and interest from the local TV media and visitors to the park.

ar

Are you managing the estate of a 'Silent key'?

Please save any QSLs for the National QSL collection, but first contact:

The Hon. Curator,
Ken Matchett VK3TL
on (03) 9728 5350
or email: jeandawson@iinet.net.au

Rare DX, special call-signs prefixes and suffixes, pictorials and pre-war QSLs are needed.

Let us save something for the history of amateur radio.

Toyota Rally of South Australia

August 6/7 2005

Colwyn Low VK5UE

WICEN SA once more provided scoring and safety communications for the Rally of South Australia. This year ROSA was sponsored by Toyota. This is a dirt road rally run in the Mt Crawford Forest reserves and unsealed council roads in the Mt Lofty Ranges north and east of Adelaide.

The voice nets used the four Adelaide 2 m repeaters with translators and three 2 m simplex translators. The digital information was carried on the APRS simplex channel 145.175.MHz

Some 50 amateurs and friends from five local radio clubs made up the team that ran communications in the field on 20 stages over two days, a further 6 operated the HQ station.

The clubs involved were South Coast ARC, Elizabeth ARC, Barossa ARC, NorthEast ARC and Adelaide Hills ARS. On some stages amateurs also had to operate the Skynet system. Skynet uses an aircraft relay to get information from the stages to the Rally HQ, this year at the Novotel Resort at Rowland Flat in the Barossa Valley.

The Best Stage Award went jointly to Charleston supported by South Coast ARC and Kenton Valley supported by the Elizabeth ARC.

In the absence of other pictures, Picture 1 is the Start Control on Kenton Valley operated by Elizabeth ARC and Picture 2 is the Kenton Valley Finish control.

The hilly terrain requires use of elevated non-directional antennas. Elevated ground planes were recommended. Skynet used a small ground plane for its 500 MHz operating frequency.

Most stages operated well and overcame the usual minor problems. Some rerouting of communications was required when stations did not use the recommended antennas and could not properly access the elevated repeaters. However in the end all the required information was delivered as required.

ar

Start Control Left to Right Andrew Hall, Dennis Hall Keith Gooley VK5OQ. Skynet box with IC706MKIIG behind. The handle is part of the battery trolley. Antenna was a copper pipe J-pole at 7m.

Finish Control. Left Packet station and Skynet on table behind Beetle, Voice net via tripod antenna.

The Ten Tec Orion is different!

Martin Luther VK7GN

What follows is not a technical review but a personal overview by an active and experienced HF operator.

The time had come to consider a new radio. Did I need one, probably not! Did I want one, yes! I had been watching the progress of the newer radios over the last year or so and had decided that the technical specifications of the Ten Tec Orion looked very good. They had stood up well in the detailed testing done by both the ARRL and the RSGB (references 1 and 2).

I had a good experience using a Ten Tec radio a few years ago in the United States. I also received excellent service from Ten Tec when I acquired a second-hand Argonaut 509.

A small windfall in 2004, and meeting Dave of TTS Systems at the Tasmanian hamfest in November, led to an order for a brand new Ten Tec Orion.

On the negative side, various stories were floating around on the internet that the computer programming in the Orion was unreliable, full of bugs that required frequent re-sets. I spent time evaluating various reflector messages. I gradually became more attuned to the comments of the radio's supporters who did their best to explain the radio and coach people in its use. The detractors on the other hand, while claiming technical superiority, did not demonstrate it in their comments.

It looks business like. It is not a show pony. The latest Icom and Yaesu offerings certainly provide more immediate consumer appearance appeal.

It is not heavy as there is no built-in power supply. The buttons all fall easily to hand and the menus are clear and not buried two or three deep. The LCD display comes in black or white and the buttons and knobs are labelled in white on black.

This is a radio that desperately wants to be taken seriously, I thought!

Connect up the power and switch on. Thanks to a delay in delivery, and the wonders of the modern internet, I had been able to spend a lot of time carefully reading the user manual downloaded from Ten Tec's excellent web site. This, of course, made me even more cocky than my usual 'turn it on and read the manual later'.

Photo – Martin VK7GN playing with his 'new toy'.

The radio stood up to this test well. It came up and told me all I needed to know on its display panel. The thing receives and transmits. Check out the overseas reviews for the numbers. It goes as advertised.

This is an operator's radio. It gives you control of most aspects of the receiver which means you can tailor the radio for best results in particular circumstances. You can also produce a terrible result!

I found it quite easy to make the radio worse! Especially easy when I started to fiddle with the settings in the AGC menu. This is a new design and some of the changes are not intuitive. However, Ten Tec seems to have taken the view that the operator should be given the power to be able to run his receiver in the way he wants. You can get the Orion set up for weak signal low band or, with a few changes, to provide a quiet rag chew on a very noisy 80! It is in the hands of the operator. Of course, this flexibility means that it is possible to go over the line that defines best performance. However, that is inevitable if the operator is to be given the power to operate at the edge of performance.

This is an operator's radio.

Most of us have accepted the compromises involved with using appliance/consumer radios that don't give us any surprises but also don't let us maximize their performance. Not quite true as, of course, many of us modify and change the 'plain vanilla' into something that actually works. Some people even modify their FT1000s to get rid of those annoying key clicks. Hi!

I have built multi-stage receivers and modified many radios, but this Orion took me a while to get the hang of how it works. I chuckle each day as I see on the net the clashing of cymbals and sounding of trumpets from those who claim to have RF engineering experience, to be radio technicians, and so on, condemning this radio which they can't make run their way. Nor could I until I read, fiddled and began to understand!

TTS Systems Communications Equipment

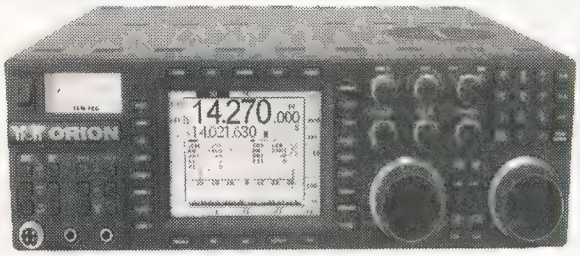
www.ttssystems.com.au **FREE CATALOGUE**

HF and VHF Transceivers, Autotuners and Kits

Phone 03 5977 4808. Fax 03 5977 4801 info@ttssystems.com.au

TEN-TEC

Announcing Orion II



What's new about ORION II ?

Super bright, TFT color display, CCFL backlighting. New 32-bit control processor using the latest generation Freescale DragonBall Super VZ chip.

Faster front panel control response and accelerated remote operation via RS-232. Orion II also has facility for a future "HIGH SPEED SWEEP" add-on. All-new firmware from the ground up. DSP code is refined, crafted and compacted to levels unimaginable even two years ago. Provides faster (stock) sweep with finer resolution, enhanced DSP automatic notch and DSP noise reduction.

All-new suite of ORION II-specific roofing filters is arranged in a single bank to allow selection of the absolute ideal roofing filter for mode, band conditions, and personal preference. The narrow (600 and 300 Hz) filters are now in the same initial bank with all the rest. This new arrangement yields subtle improvement in dynamic range. The new filters have less passband ripple than ever offered.

ORION II comes standard with 20, 6, 2.4, and 1 kHz installed. Optional filters are 1.8 kHz (model 2000), 600 Hz (model 2001), 300 Hz (model 2002). That's not all - the optional filters cost less than before! Mixing architecture for analog stages has been re-arranged to give self-correction for frequency stability.

Digital mode operators will appreciate the variable (programmable) line level output on rear panel completely independent of front panel controls.

ORION II now uses the popular 8 pin mic connector. This broadens the range of mikes and accessories readily available through the hobby for your use without finding or making adaptors.
We expect deliveries of ORION II mid November. We are taking orders now. As always, no charge will be made to your credit card for an order until the day the item(s) ship.

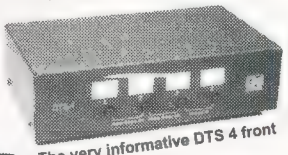
This is an even more advanced rig than the one tested in the article.

New From LDG Electronics —

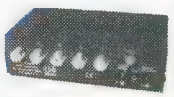
DTS-4 Desktop Coaxial Switch

Switching between antennas no longer requires under-desk acrobatics to connect up, but coax switches often take up scarce desk space.
And if lightning strikes, "Did I set the switch to Ground?" If not, do you now own a pile of rubble.
With LDG DTS-4 Desktop Coaxial Switch you can instantly switch your rig between 4 antennas with the press of a button. All five coax sockets (4 in,1 out) are on the back, . The DTS-4 will fit in just about anywhere on your desk. A bright red LED indicates the antenna in use. Touch a button and all inputs are grounded. Remember that lightning strike when you are out? The DTS-4 can sense when your rig is off, and automatically ground all antenna inputs and you start up again on the last used antenna.
Using a compact remote control box (DTS-4R) you can remote-mount the DTS-4, the desktopper has all the features but only a single, slim control cable running to the remote DTS-4 switch. 1500 watts of RF power on HF (1000W on 6M), it can be used with any coax-fed antenna. If the power supply fails, it grounds all inputs.

Six position version will soon be available



The very informative DTS 4 front



Highly organised back

Model 516 Argonaut V IF-DSP QRP Transceiver

IF-DSP, modern 20 watt HF transceiver. 20 watts output power, all modes. SSB, CW, digital modes, and FM. Front panel adjust 1-20 watts output. AM operation at 5 watts carrier power (20 watts PEP). Metering measures forward or reflected power in switchable 2 or 20 watt scales.

We have

SGC

SGC 237 Waterproof Auto Tuners
SGC 239 Economy Auto Tuners

Autek Antenna Analysers
Autek RF 2kW in-line Power meters

Lutron

Lutron Measuring Instruments

Vantage Pro Weather Stations

MAC-200 MASTER ANTENNA CONTROLLER (Smartuner Built-In)

Control up to 5 Antennas

Select the right antenna, for right band, at right time. The Master Antenna Controller is your base station control center, no switching and tuning. You select from five antennas and automatically get minimum SWR. Monitor your power and SWR. With MAC-200 you control your antennas.

ADSP SPEAKER

SGC

Three modes:
•no noise reduction; original ADSP; new ADSP2 noise reduction –up to 26 dB of noise

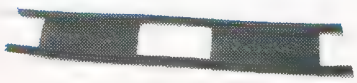
LDG ELECTRONICS

Z100 TUNER ANDZ1000 HIGH POWER AUTO TUNER

TEN-TEC **KITS**

Ten-Tec 3003 Acro-Bat antenna hanger.

UV resistant, S/S hardware. Hang ladder line-fed or small gauge RG-58 or RG8X coax-fed wire antenna.



Order your 450 ohm Ladder Line NOW

SG-237 Smartuner™

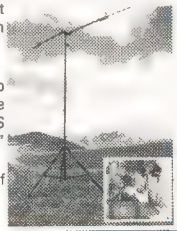
High density surface mount components in a 4 layer PCB on chassis: high efficiency, reliability, performance, excellent electrical and RF ground system. Weather resistant, factory-sealed ABS plastic.
MULTIPLE APPLICATIONS -- Use for base, mobile, portable, marine or aviation. Rugged and small gives max. flexibility.
100W power, coverage to 60MHz, matches most popular HF transceivers. Use balanced or unbalanced antenna: whips, backstays, dipoles, loops and longwires, only 28 feet of antenna for full coverage operation.

Full info available—ask

BUDDIPOLE

Dipole — vertical... Fits in travel bag! Optimised for transmit power, proven for DX work. Ultra light materials, High-Q coils. Zero-loss balun with Quick-Connect feedpoint.
Standard Comes with—

- Two 22" black aluminium arms. Two multi-band coils (40- 10m), adjustable coil tap pre-marked system • Two SS telescopic whips, VersaTee™ w 3/8" x 24 adaptors
- BNC/PL259 coax connector, 25' of RG58 coax
- Carry bag



Rule Number 1

If you want a radio to just chat to other hams, and you have no interest in the ultimate receive capability, do not buy an Orion.

Having established a variety of set ups for different modes or operating techniques they can be recorded in the radio's user profiles.

After a while I arrived at the point where I could think Orion. I began doing side by side comparisons with my Icom 765s, two of which have been the mainstay of my HF operation for over a decade. I understand the strengths and weaknesses of these radios very well.

In normal daily operation there is little difference. The Orion has better audio but I did not hear anything on the Orion that is not OK on the 765 also.

There was an RTTY contest on that weekend so I got them both set up with a logging programme so that I could build up a band map of calls heard. Both work well on the mode. The Orion has some filters and notch options that make it slightly better but an external DSP on the 765 brings it close.

So I get on 40 m and start building up the band map. The band is open to Europe and I put every single call I can resolve on the 765 into the band map. Then I did the same thing on the Orion. There seemed to be more signals so I did another pass on the 765 to make sure conditions were not changing quickly.

Back to the Orion and the band map population looked different. I was seeing more stations closer together than I was used to seeing! Especially on 40 m to Europe the BIG stations tend to dominate and the map goes from one to the other of these super stations. However, in this test I was seeing some smaller stations between the big guys.

Hmmm! This is where the Orion really shines through. I am able to copy signals between the big stations on the Orion that I cannot resolve at all on the 765.

Rule Number 2

If you want to copy weak signals in the worst possible noise and QRM, consider the Orion.

In doing all the tuning around I had cause to change the tuning rate for the VFO a number of times. This involves pushing the step button then choosing from the options which appear on the screen; another button push and its done. I thought, wouldn't it be nice if I could just speed up a bit using one button instead of two! No sooner thought than I found that pushing the VFO button, just to the right of the tuning knob, toggles the tuning rate up one step and back down with the next push.

This thing was designed by people who actually use HF radios, a lot!

The next weekend saw a CW contest. In CW I usually ride a finger on the RIT control to resolve one signal out of the pile by changing the tones and fringing on the edges. In the 765 the RIT is a medium sized knob ideally placed at the bottom of the radio and matches this way of operating.

At first I was upset by the Orion's RIT which is half way up the panel. I kept looking enviously at that big knob at the bottom which is a second VFO thinking wouldn't it be great to use that. Yes, you are ahead of me and so are Ten Tec. You can allocate each VFO to any of Main Rx, Main Tx, and Sub Rx. OK, one button puts VFO B on the Same Frequency as VFO A. Another button puts VFO A on Main TX, Switch OFF VFO A from main Rx and switch on VFO B to main Rx. Split operation with two proper tuning knobs. Going back to transceive is simple.

...a very good system for receiving two frequencies while providing flexible transmit control. It provides satisfaction to those prepared to learn how to use its performance.

The Orion has an external pod which can be located by the computer keyboard and provides big knob RIT along with many other facilities.

Things are not only explained on the display but also indicated by LEDs on the various switches. Both tuning knobs have a very nice feel!

The flexibility of the radio is outstanding. This radio has been designed and constructed by people who understand HF operation.

There are two VFOs (each with its own large knob), two receivers and one transmitter which can instantaneously transceive with either receiver. All in the one box! One receiver is optimized for ham bands while the other provides the normal wide band coverage. They each have their own filters and identical DSP capability. The only difference is in the front end. The second receiver is not as 'bullet proof' as the main receiver but it is still very good.

Although there is only one transmitter, it can control two linear amplifiers with separate band and keying (including QSK loop control) information to each.

For years I have used the two transceivers in my HF station as what is known as a single operator two radio (SO2R) contest station. I can listen to both at the same time, one on the left ear and one on the right, or switch to concentrate on one or the other. Each transceiver has its own linear and a flexible antenna switching system allows each to access any antenna.

The Orion goes some way to replace the two transceivers. It really does not matter that one receiver is slightly better than the other as the second one can be on the multiplier chaser. It is so easy to swap from one receiver to the other that flexibility is maintained and the best radio can be used where it is needed. With only one transmitter it is also impossible to transmit on two frequencies at once, a definite no-no if you are single op. I have not yet found a way to get the second receiver to listen on one band while the transmitter is CQing on another. So, in that sense it, is not a complete SO2R solution.

The two receivers also help to work DXpeditions with one receiver on the pile up frequency and the other on their transmit frequency. The Orion's inbuilt feature allows the receiver outputs to be switched to each headset ear so that both frequencies can be monitored simultaneously. Works smoothly. You could even use one receiver to look for the DXpedition on other bands while trying to get them on the existing band.

Rule Number 3

If you want SO2R type flexibility either for contests, DX chasing or monitoring multiple frequencies, the Orion can do it in one box.

I have become a convert to the Orion. However, like any amateur radio equipment, it is not everything to everybody. Anyone involved in manufacturing knows the pricing limitations that force this. It is a very good system for receiving two frequencies while providing flexible transmit control. It provides satisfaction to those prepared to learn how to use its performance.

Download the manual and if, having read it carefully, you feel that you cannot be bothered with thresholds, gains and decays, then the Orion is not for you.

Celebrating the ITU's 140th birthday

Barry Robinson VK3JBR

Special event station AX3ITU was activated on World Telecommunications Day, 17 May 2005, and achieved an overwhelming success in spite of poor propagation and band conditions.

The 24 hour operation is particularly challenging because it's duration is a single UTC day. A team of Amateur Radio Victoria members joined a roster and their efforts resulted in 600 contacts, including 30 countries.

More than half of the contacts were made on CW. Peter Forbes VK3QI suffered a radar type signal interference on 30 metres but was peaking QSOs at a rate of up to 60 an hour. Dale Whatley VK3YR added to the CW tally.

Phone operation was on the 80, 40, 20, 15, 10 and 2 metre bands. Rostered operators who were lucky to have useable propagation during their time slots were Max Brighton VK3ZMT, Peter Wajngarten VK3OJ, Ernie Walls VK3FM, Gerard Werner VK3GER, Jim Linton VK3PC, Rob Carmichael VK3DTR, Rob Ashlin VK3EK and Peter Morrison VK3NPI.

Using PSK31 was Jim Baxter VK3KE. In what could be 'firsts' for a special event station of this type, AX3ITU used Amateur Television and several passes of a new satellite.

ATV veteran Peter Cossins VK3BFG displayed a QSL card on the Melbourne ATV repeater VK3RTV inviting reception reports via the ATV 2 metre liaison channel. A total of 12 stations through the Melbourne area made contact during the two-hour special event telecast.

Noel Ferguson VK3FI put AX3ITU on air through AMSAT-India's Hamsat VO-52 just days after reaching orbit and being commissioned. Despite the Doppler shift quirks of the low earth orbiting satellite, he had plenty of QSOs.

AMSAT-India gave Amateur Radio Victoria its blessing and good wishes for the special event station. An audio file of an AX3ITU contact through VO-52 was being sent to AMSAT-India for its information.

AX3ITU has been active annually for most of the past two decades on 17 May, the International Telecommunications Union's birthday. Amateur Radio Victoria has issued a commemorative QSL card. Claims for it can be made direct to VK3WI QTHR or via the bureau.

Photo 1 - Peter Forbes VK3QI on the key activating AX3ITU.

The Ten Tec Orion is different! *continued*

You will never be happy with it. If you like glitter, colour displays, multiple readouts and knobs and buttons, then the plain black Orion is not for you. This is a serious radio that takes itself seriously!

Finally, let me comment on the most often heard comment about the Orion: that it requires frequent software resets. I have not experienced this in three months of operation. My radio has only complained when I have done odd things like having the computer send it an instruction to set its frequency to 00 MHZ!

The Orion is the best radio I have used specifically designed for the amateur radio HF enthusiast.

I recently operated at a multi-operator multi-band contest station using FT1000MPs of various ages and models. All of them felt inferior to the Orion, especially on the low bands.

The Orion reminds me a lot of old sports cars, like the Porsche 911 or Austin Healey 3000. In the right hands they were brilliant and a joy to drive but, if you did not know what you were doing, they could slide and spin very quickly causing great embarrassment. The Orion is the best radio I have used specifically designed for the amateur radio HF enthusiast.

Given the price of these high end radios now it is hard to answer the question on whether to spend the money. My old Icom is worth less than 20% of the Orion. The Orion is a better radio but, for most operators, it is not five times better! However, if you want the best pure radio performance it is the price to be paid!

References

ARRL QST January 2004

RSGB Radcom June 2004

Ten Tec Orion website:
http://radio.tentec.com/Amateur/Transceivers/TT565

TTS Systems: www.ttsystems.com.au

Review of

bhi digital signal processing units

Eric Buggee VK3AX

Recently, I was given two samples of English "bhi ltd" Digital Signal Processing units with a request to evaluate these units for this magazine. They were a noise eliminating speaker, model NES10-2; and an amplified noise eliminating DSP module, model NEDSP1062 KBD. The subject items were kindly supplied by Lee Andrews of Andrews Communications at Greystanes in Sydney.

Noise reduction using DSP engines has been with us for a few years now. As time has passed, the techniques used in the DSP process have been refined significantly in both the digital chips and the onboard software (firmware).

The software and hardware have been refined to the point that we have a technology that offers significant improvements over the devices available four to five years ago.

Photo 1 - The bhi NES10-2 noise eliminating speaker.

Fundamentals of DSP

DSP is a complex and powerful technique allowing manipulation of analogue signals impaired by the presence of noise.

A basic DSP system takes the analogue signal, plus noise, and applies this to an A to D converter, either separate from, or part of, an LSI chip (engine) with a resolution anywhere from 8 to 16 bits or even more, depending on the system (8 bits = resolution of 1 in 256 and 16 bits = resolution of 1 in 65,536).

The digitized data stream is transferred (clocked) into the DSP engine where the data stream is manipulated using proprietary algorithms that separate the coherent signal(s) from the noise that is random in nature and thus non coherent.

The firmware (embedded software) in the DSP engine handles the signals, data or voice, in an adaptive process (depending on the characteristics of the noise) that effectively enhances the data/voice signal whilst suppressing the noise components on the original signal.

This enhanced data stream is then clocked into the D to A converter where it is amplified and fed to the speaker or modem as appropriate.

DSP in the real world

I had heard from various fellow amateurs in the past year or so that the new noise cancelling speaker units now available are nothing short of "miraculous".

Being fairly conservative (read sceptical) by nature, I applied a healthy discount to these statements by my fellow amateurs, based upon my hands-on experience, having owned two different makes of outboard DSP units, both of American origin. One has since been sold and one retained in daily use. No names, no recriminations! I also have installed a DSP unit in my workhorse IC706MK2.

The main shack rig, a Kenwood TS2000, also has DSP capabilities, so I believe this gives me a reasonable basis on which to comment.

These units from bhi ltd use adaptive processing algorithms, which give results that are truly impressive. In fact, I was stunned by their performance.

Allow me to digress here on the liking for DSP. Being on the sunny side of 70, my hearing is no longer at the point where I can hear TV line oscillator transformers doing their magnetostrictive dance (that is singing at 15,625 Hz). Also, years of working low band DX (pre DSP days) with attendant summer static crashes have not helped!

Enter DSP. I don't know about you,

but for me every dollar spent on GOOD DSP is well spent, if only from the aspect of hearing conservation! There is also the enhanced readability that DSP provides.

The DSP tests

The units arrived well packaged in their respective cartons with bubble pack plastic packets. Packed with the NES10-2 noise eliminating speaker were two mounting screws, four self-adhesive rubber pads, a fused power lead, a car accessory lead (cigarette lighter plug) and a customer feedback card. There also was included a very informative 31 page operating manual. This manual is pocket sized with illustrations of actual oscilloscope displays showing before and after processing of signals.

The NES10-2 is a small black speaker/box measuring approx 110 x 65 x 55 mm and weighing about 200 gm. At the rear to the right is a 2.1 mm DC power receptacle, centre pin positive. It will accept voltage in the range of 12-24 V DC. To the left of the power receptacle is a table showing DIP switch settings for the various degrees of noise cancellation. To the left of the table is the DIP switch labelled "Filter Select" allowing for selection of one of eight levels of noise cancellation. Level 8 provides the most, while level 1 the least cancellation. The unit comes set at level 6. The DIP switch has four sections, but only three are used. The other is reserved for future use.

On the bottom of the speaker housing is the power switch/audio bypass. This slide switch cuts power to the unit and a released relay connects the speaker directly to the audio line from the feed source (receiver or transceiver).

On the top of the NES10-2 there is a slide switch labelled 'Noise Cancellation (On-Off)' and a small pre-set volume control shaft, which is user pre-set to the required level.

Installation

This could not be easier. The power lead is connected to a suitable 12 to 24 volt DC source, noting correct polarity for the power feed. Your transceiver or receiver may have a compatible 12 V DC socket with capability to 500 mA.

The attached audio feed cable is about 2 m long, terminating in a 3.5 mm stereo jack plug which should be plugged into the external speaker socket on your radio. All that remains is to tune in to a suitable signal and adjust the audio output levels, from both your radio and the NES10-2, to your own personal liking, ensuring that you do not over-drive the input to the NES10-2.

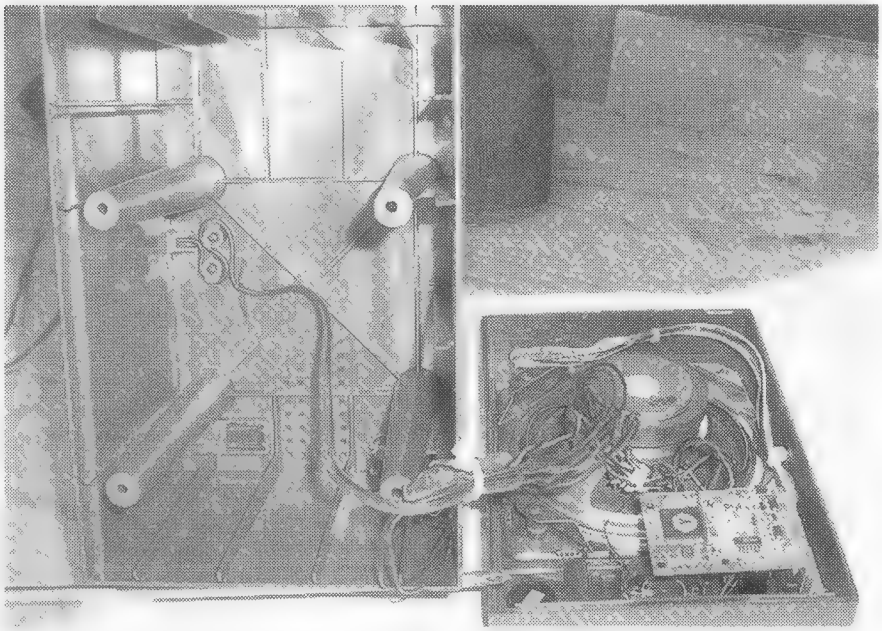


Photo 2 - View of the bhi NEDSP1062 KBD pre-wired module as fitted into a discarded Sony speaker housing.

... results that are truly impressive. In fact, I was stunned by their performance.

Turn on the noise cancelling and the front panel LED will change from red to green, indicating that the noise cancelling circuitry is active. Sit back and enjoy significantly enhanced audio minus noise.

Using the NES10-2

I have several radios with which I tried the NES10-2. They are an ICOM IC706MK2, a Kenwood TS2000, a Drake R4C, a Hammarlund SP600 Super Pro and an Eddystone 880/2.

On all of the above radios, signals that were weak and difficult to copy, and at times unreadable, became readable with virtually no noise. The normal band noises, such as hissing, popping, crackling and frying, were very significantly reduced.

bhi ltd claim noise reduction performance from 9 to 35 dB, selectable via tabulated switch settings from 1 to 8.

Performance measurements

To measure the noise attenuation at given settings, using either HF band noise or noise from an open mute on a VHF FM rig, is not as easy as one may think.

I tried using the automated signal-to-noise ratio test on my Rohde and Schwarz CMT52 and CMT54 test sets, but the pulsed nature of the automated test routine, whilst perfect for a normal radio, did not work properly due to the inherent processing delay of the NES10-2.

So, I resorted to an analogue test set-up using a Marconi audio power meter to read the output noise power from the NES10-2. With input and output levels set to equal power, measurements were then attempted by switching between processing on and off. This was, likewise, fraught with difficulty, as peak amplitude of the noise was quite variable.

Further measurements were made using a Tektronix 7704A scope to measure the input /output noise reduction under actual conditions.

I can confirm that the NES10-2 does provide, on analogue measurement, a minimum of 20 dB of noise reduction. To do justice to the NES10-2 one would have to employ a sophisticated noise test setup with peak hold capability and synchronized to accurately relate

Photo 3 - Front view of the discarded Sony speaker housing showing, at the lower left corner, the two button control keyboard and tri-colour LED of the NEDSP1062 KBD. At the upper left is a 4 mm hole with the sounder behind.

the instantaneous reading of the input bursts of noise/signal to the processed output on the same statistical noise and signal burst.

Having said the foregoing, "The proof of the pudding is in the eating"!

The NES10-2 at work

This is where the unit shines! The NES10-2 works superbly on all of its settings.

I have two minor comments. Firstly, at all settings up to 6, there are no audible processing artefacts. What comes out is wanted signal minus noise. Being picky, at setting 7 there is a small amount of processing noise as the unit is working to remove heavy noise and, at setting 8, this "watery" noise is more noticeable. But, operationally, this is a small price to pay for such extreme levels of performance. In my view, the only times that one would need to use setting 8 is when one is desperately trying to get the last ounce of system performance on weak signal DX work. This is where a good low noise antenna will provide a valuable performance edge. But that is another matter!

My second comment is on the matter of the transducer (speaker) in the NES10-2 itself. I found that at high levels of audio the little speaker itself was lacking. It was not able to cleanly reproduce the audio drive from the internal power amplifier. However, when a good quality external speaker or headphones were plugged in to the NES10-2 the audio was clean and clear for the same drive level.

Summary

By comparison with the other outboard DSP units I have owned, the NES10-2 wins hands down. Compared to the resident DSP unit in the Kenwood TS2000, again there is no contest! The bhi ltd NES10-2 is a clear winner!

Compared to the resident DSP unit in the IC706MK2, again the NES10-2 is superior. However, the margin is not quite as great although the internal DSP in the IC706MK2 is still no match against the NES10-2. It must be noted here that, using the internal DSP in the IC706 on setting 0 to 3, the NES10-2, in tandem, afforded a significant additional drop in the noise output.

The NES10-2 is not specifically designed to attenuate heterodynes or other random tones. However, it does provide about 20 dB of attenuation of musical notes and tones such as heterodynes, etc.

I think that the secret behind the superior performance of the NES10-2 is in the adaptive nature of the processing in its firmware. There are no noticeable artefacts such as little background tones, tinkling noises or distortion products in the output. This implies that the processor uses spectral diffusion techniques. It is obvious that the noise reduction technique is adaptive, coping with many different noise types with no apparent stumbles.

The frequency response is adequate for good, clear audio. A quick test confirmed it to be flat from below 100 Hz up to 4 kHz.

For top-of-the-line noise reduction performance it is the best overall compact package suitable for mobile, portable, or shack operation that I know.

Tests on the bhi ltd NEDSP1062 KBD amplified noise eliminating DSP module

This was the second of the two bhi ltd units that I was asked to evaluate. This unit is a modular PC board unit ideal for building into homebrew gear or as an outboard stand-alone powered noise reduction unit, which may be used with any number of radios.

With the supplier's agreement, I built the module into a spare speaker housing. There was plenty of room to fit the module, small keyboard and small sounder to indicate mode changes and processing levels.

Clear concise instructions and drawings were included to mark-up, drill and mount the PC board module. The components are supplied pre-wired, with adequate wiring tail lengths for assembly. The whole assembly took about two hours.

Testing the assembly

Everything worked as described by bhi ltd and verifying operation of the NEDSP1062-KBD module went flawlessly, as described in the handbook.

All functional control of the module is accessed via the two tactile push buttons mounted on its keyboard. This same PCB also carries a tri-colour LED.

The Power button switches the module on and off. When the module is switched OFF there is a standing current drain of 6 mA and the audio bypasses the module direct to the speaker. Switching the power on routes the audio through the module to the speaker. With the power on, but the DSP module switched OFF, the audio passes through the module but with no processing.

The DSP level button is a multifunction button providing the following:

DSP on/off.

DSP level: 4 or 8 levels of noise/tone cancellation.

Demonstration modes.

To the right of the noise/tone cancellation button is the tri-colour LED.

Set-up

Holding down the DSP level button, a single press of the Power button enables the module in set-up mode. This is

indicated by a two-tone beep. Releasing the DSP button at this point puts the module into set-up mode 1. Keeping the DSP button pressed until a second two-tone beep sequence is heard, and then releasing it, enables the module in set-up mode 2. Keeping the DSP button pressed until a third two-tone beep allows four levels of processing. Keeping the button depressed until a fourth two-tone beep sequence is heard will enable the module into eight levels of processing. I know this may seem a little complicated but, once the various modes have been explored, the procedure is straightforward. The module will retain the selected level/mode until changed.

Demonstration Modes

Mode 1. This alternately switches noise cancellation on for 1.5 seconds, then off for 1.5 seconds. It will then move to the next level and repeat the process. This mode is very effective at demonstrating the different DSP levels.

Mode 2. The module switches into noise cancellation for three seconds and then into direct audio feed for three seconds. This is a good demonstration of the before and after noise cancellation.

To exit either demonstration mode hold the DSP button down until a two-tone beep is heard.

As stated previously, four or eight levels of noise reduction are available. The amount of tone and noise reduction available vary from 4 dB of tone reduction and 9 dB of noise reduction for level 1, through to 65 dB of tone reduction and 35 dB of white noise reduction for level 8.

Summary of results for NEDSP1062-KBD.

The unit performed to specifications in all functional aspects of the tests performed. Setting of the various modes and levels is straightforward and logical. Audio quality is excellent.

Caution for potential constructors of this kit

There is the potential for RF interference, particularly if attention is not paid to lead dress and appropriate shielding of input/output wiring. For example, do NOT bundle input, output, and power wiring together. Keep them separated as much as possible and, if they must cross, ensure this is done at right angles.

The potential for interference will be reduced if the whole assembly is in a grounded metal enclosure. If a plastic enclosure must be used, the plastic housing should be lined with a metal foil such as kitchen aluminium foil. Connect the foil to common, or ground, of the speaker audio feed from the rig. Hold in place with a contact adhesive.

The use of ferrite toroids with multiple turns as appropriate on input, output and power leads is also recommended if interference problems persist

I wish to thank Garth Jenkins VK3BBK and Drew Diamond VK3XU for their review of, and positive comments on, the initial draft.

ar

Andrews Communications Systems

ESTABLISHED 1976 ACN 001 968 752

ICOM DISCOUNTED

IC-756 Pro III HF+6m	$5,499
IC-7400 HF+6m+2m	$2,699
IC-746 Pro HF+6m+2m	$2,699
IC-718 HF SSB	$999
IC-910H 2m+70cm SSB	$2,499
IC-208H 2m+70cm	$599
IC-V8000 2m 75W	$499
IC-T90A Triband h/h	$499

✸ 3 YEAR WARRANTY ✸

ALINCO

Factory Direct Importer

NEW DR-635T Twinbander	$699
DR-605E Duplex dualband	$599
DR-135T Mk2 2m 50W	$399
DJ-V5E Dualband handheld	$499
DJ-X2000E Hi-tech scanner	$799
DJ-X10E All-mode scanner	$599
DJ-596T Dual band handheld	$299
DJ-C7 Tiny dualband h/h	$299

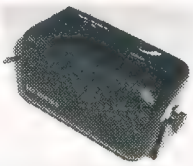
✸ 3 YEAR WARRANTY ✸

ICOM IC-7000

HF~70cm FLL COL. TFT DISP.
IF DSP, Twin PBT,508 channel memory and much more!

bhi (fdi) DSP NES10-2 speaker

$249



KENWOOD DISCOUNTED

TS-570SG HF+6m+ ATU	$1,999	TM-271A K 2m mobile	$399
TS-480HX HF 200W+6m	$1,999	TS-50S HF 100W	$1,299
TS-2000 HF~70cm + ATU	$2,999	TS-480SAT HF+6m+ ATU	$1,899
TS-2000 HF~23cm + ATU	$3,999	TM-G707A 2m/70cm mobile	$499

YAESU DISCOUNTED

FT-1000MP MkV 200W	$3,999	FT-857D HF-70cm	$1,299
FT-1000MP MkV Field	$3,499	FT- 2800M 2m 65W	$299
FT- 847 HF-70cm	$2,499	FT-60R Dualband h/h	$399
FT-7800R	$499	VX-1R w/2 batteries.	$299
FT- 8900R Quadband	$799	VX- 2R Tiny Dualband	$299
FT- 8800R Dualband	$699	VX- 5R Triband H/H	$449
FT- 897D HF-70cm	$1,399	VX- 7R Deluxe H/H	$599

YAESU ROTATORS DISCOUNTED ✸ 3 YEAR WARRANTY ✸

Maldol and Comet Antennas Discounted!

NEW!

ANDREWS DUALBAND WHIPS frm $49 (similar Diamond). Factory Direct Importer!
ANDREWS BATTERIES (fdi) New fr. $10!DIAMOND Antennas (fdi) fr. $49!
MALDOL Antennas (fdi) fr. $49!
COMET Antennas fr. $49 ea!
HUSTLER HF Antennas fr. $349 ea!
HIGH SIERRA HF Ant. (fdi) fr. $499 ea!
TET-EMTRON HF Antennas.
AVAIR (fdi) POWER METERS, "T" LEADS, ETC.
MFJ Antennas, Tuners, Analysers, etc.
BENELEC RG-213/U 100m roll $119.
ICOM BC-143/144N/135/156 $49 ea!

AMPLIFIERS

AL-811A HF 600W...	$1799.
AL-811H HF 800W...	$2199.
THP (fdi) HF HL-1KFX	$2999.
HL-2KFX	$5999.

YAESU, PALOMAR(fdi), TE SYSTEMS(fdi).

We export worldwide. We also hold some stock in New Zealand!

CALL (02) 9636-9060 or 9688-4301 or FAX 9688-1995

SHOP 8, 41 BATHURST ST, GREYSTANES, NSW 2145

Why pay more? MAIL ORDER TO PO BOX 40, PENDLE HILL, NSW 2145

Some items indent. Prices subject to change without notice - limited stock, some items. E & OE 10/05

★http://www.andrewscom.com.au ★ email: lee.andrews1@bigpond.com

News from...

VK2

Tim Mills VK2ZTM.

AR-NSW has a new web domain - www.arnsw.org.au - established by Web Master Chris VK2QV. The e-mail address remains as - vk2wi@ozemail.com.au - .

Last month, reference was made to making Deceased Estate equipment available for tender. Delayed, partly by waiting on the new web domain, it should now be in place for the November Trash and Treasure. This T & T is planne to be held at the VK2WI site at Dural - weather permitting.

While on the subject of Deceased Estates, AR-NSW continued to provide this service of behalf of the families of "Silent Keys". If we can assist, please contact the Parramatta office. Telephone 02 9689 2417 or an e-mail to vk2wi@ozemail.com.au While nobody likes to think about becoming a "Silent Key", you should mention this service to family members or leave instructions for executors.

Many families, without close contact to our hobby, are left wondering how to dispose of equipment. Please contact the office if you would like more details on this service.

The planned club meeting in conjunction with the National WIA is now scheduled for Saturday 19th November. No other details to hand as these notes were prepared.

The Parramatta office is now staffed on Tuesday, Thursday and Friday, 11 am to 2 pm by a team of volunteers. If you intend to visit and are coming from some distance, telephone ahead – 02 9689 2417 – to check the office is open.

The new keyer on the VK2WI 80 metre morse transmission is going well and we thank those who have submitted reports. Likewise the new 6 metre beacon - 50.289 MHz - is going well and waiting for some summer openings to tell the world. Clubs and groups looking for projects could consider establishing a beacon. VK2 has very few, only those at Dural and those provided by VK1. There is a 6 metre beacon in Newcastle. A few more in country regions would help others observe where and when the openings occur, when there are not operators present. Contact NTAC via the office for establishment details.

A request to clubs and groups. While many are already regular contributors with news and coming events for VK2WI news we would like to offer this service to others. While many are sending in details to the VK1WIA news, why not put an extra address in the e-mail. Send it to vk2wi@ozemail.com.au There is the extra space in the evening news to cover your operations in detail. Most VK2WI news is included on the AR-NSW web site.

VK2WI is also looking for more operators to join the broadcast team. If you would like to assist contact the station in the callback period or the Parramatta office. 73 - Tim.

VK3

Amateur Radio Victoria News

Barry Robinson VK3JBR

Pending retirement

We're seeking a Secretary to replace John Brown VK3JJB who will retire from the Amateur Radio Victoria (ARV) Council at the end of the year to enjoy an extended holiday with his wife Jan. The position is Company Secretary with responsibilities for statutory returns and other corporate requirements, plus other membership administrative tasks. Members wanting to know more about this vacancy, should contact the President, Jim Linton VK3PC. Ideally the position should be filled in the short-term to ensure a smooth hand-over.

Commonwealth Games Melbourne

It was with disappointment that the Commonwealth Games Committee rejected ARV's request to use the official Games logo on proposed special event station QSL cards. An application is pending with ACMA for two special event call signs to celebrate the Queen's Baton Relay and the Games.

Repeater Report

The VK3RPU repeater at Arthur's Seat on the Mornington Peninsula is to receive a replacement tower, followed by new repeater equipment. A new 'snow' antenna has been provided for the VK3RWZ Mt William repeater and arrangements for replacement of VK3RNE Mt Big Ben are ongoing in conjunction with the Twin Cities Radio and Electronics Club. The installation of a new 148 MHz pager system for emergency services is being monitored and once the roll out of these is completed tests will be carried out to check for any adverse impact on co-sited or close proximity 2-metre repeaters.

Support for APRS

The Automatic Position Reporting System (APRS) Group requested the assistance of Amateur Radio Victoria to change their digipeaters to the National APRS frequency. The estimated cost is $700 and the group has already raised $200 in donations from the amateur community. ARV already covers the licensing costs where APRS digipeaters are co-located on its repeater sites and has more recently provided an antenna for the Mt William APRS digipeater. In response to the APRS Group request, the Council of Amateur Radio Victoria will provide $400 for the project.

Electrical safety

The Chief Electrical Inspector of Victoria has warned about the misuse of power boards in homes following recent incidents that have resulted in fires. The Australian Standard requires all power boards to include a circuit breaker to prevent overloading if fitted with three or more outlets. Some older models don't have this feature. Power boards should not be used outdoors, in dusty or polluted environments such as workshops and building sites or wet areas like kitchens and bathrooms.

Web: amateurradio.com.au
Email: arv@amateurradio.com.au
Foundation webpage: amateurradio.com.au/foundation

VK4

Far North Queensland Horse Endurance Ride – Herberton

Radio Amateurs once again provided radio coverage for the above event from 21 – 25 June 2005.

The event covers about 80 km per day, 2 x 40 km sections and requires about 3 checkpoints during each section to ensure both horse and rider are on the correct track, are fit and well, and giving the participants an idea of their speed.

Amateurs assisting were Dennis VK4JDJ, Stan VK4MFA, John VK4JON and Mike VK4MIK.

Communications were via 2 m FM, both simplex and duplex (VK4RTA), plus UHF CB, which allows the base operator to direct aid to riders – there is a first aid person, Vet and farrier at base during the ride. The base antenna was a 5/8 whip with radials on sectionalized aluminium poles that are about 10 metres in height. Due to the hilly terrain the use of the 2-m and the knife edge diffraction allows signals to propagate out of valleys etc.

The "Radio Men" received much praise for being cheerful, having a joke, giving water and just being there. The appreciation grew with the tiredness factor of horse and rider.

The days began before 5 am and concluded with a briefing on the next day's route and allocation of checkpoints about 4-5 pm.

Visitors to us were Dave VK4KIX and Bill VK4WL. Local hams also made contact over the period with Gary VK4ABW, from Townsville, making contact via RTA –over 200 kms!

A long wire was trialled for our forth-coming event at Cooktown for the International Lighthouse Weekend, where we will be using the callsign VI4GHL. A couple of contacts into Japan were made with JN1VXT port6 and JA3KWport6 with our signal report of 5-9.

Mike VK4MIK

VK5

Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

The August meeting of AHARS was in their new venue, in the centre of Blackwood. Anyone visiting Adelaide on the third Thursday of the month is welcome to attend a meeting. If you contact the President Jim VK5NB or the Secretary, Leith VK5QH they will give you directions to the new hall. Meetings start at 7.30 and end at about 10.00.

The speaker for this meeting had to be changed at the last minute but the substitute was extremely interesting and informative, with many ideas that could be used by others.

Sasi, now VK5SN has held many callsigns. He is Singapore born and, particularly as a student, he lived in a number of flats and apartments where it was impossible to erect an antenna for HF. The amazing variety of ways lengths of wire can be extended or draped around so as to be almost invisible, yet also to work as aerials was illustrated with some excellent photos and diagrams projected onto the screen.

He almost exclusively used very low power, QRP and what he called "stealth" power but made contacts with stations around the world that way. Perseverance and skill paid off handsomely. He has since then met a number of his contacts and they have become firm friends. Amateur radio is a great hobby for people in all walks of life and an ideal way to "meet" people from other parts of the world.

Sasi was to have spoken at the meeting in September but he had obviously prepared his talk in advance so was able to present it at short notice.

At the conclusion of the meeting plans to undertake a number of aerial projects were discussed and will probably go ahead in the next few months. Listen out for the results.

The Fleurieu Group

Even though in winter many people travel to warmer climes, there were 14 at the luncheon in August.

The group is just the right size for everyone to be able to talk to everyone else quite easily, and we are fortunate that, as long as we finish eating by 2.00, the hotel does not mind how long we sit at the table.

Some of the attendees live in the Victor Harbour/Goolwa area but those that travel down there have pleasant views to see on the way through the Adelaide Hills. Perhaps it is not so surprising that so many meet every three months.

News from...

VK6

Will McGhie VK6UU
will2@iinet.net.au 08 9291 7165

A bit more history 1922

We pick up the reading of the VK6 WIA meeting minutes of the first meeting on the 25th of January 1922 at the Perth Observatory. Apart from some council business the meeting was a tour of the Perth Astronomical Observatory with the meeting closing at 11PM.

February's council meeting at Warwick House (council meetings preceeded the general meeting) called for volunteers to "construct apparatus and cabinet for a wireless set for the Institute." Volunteers came forward at the general meeting and it was decided to meet at Mr Coxon's house to construct the transmitter. The cabinet was to be constructed by a volunteer working bee at Mr. Steven's house. Mr Coxon lectured on long range receiving of European stations.

March's meeting heard reports on the progress of the WIA wireless set. Most of the meeting was given over to questions on popular scientific subjects and a discussion on the difficulty of language among wireless operators. Questions on wireless topics included information about valves, receiving circuits, sizes of tuning coils, condensers and aerials.

April's meeting passed a motion to subscribe to the journal "Electrical Times". A motion was carried "to allow members to transfer from one state to another provided that clearance be given by Secretary." An interesting entry is "A letter of thanks be sent to the Secretary NSW Division thanking him for forwarding syllabus and asking what power is being used as it may be possible for WA amateurs to hear concerts." I gather the syllabus means program of a concert being transmitted from NSW, frequency unknown. Also "the Secretary was asked to write to the Victorian Branch to ask if anything further was done re deputation to Prime Minister re transmitting licences."

May's council meeting admitted 3 new members. A letter was to be sent to the South Australian Division asking if they had heard of an item in the "West Australian" re amateur licences. The lecture repeated the lecture on "time".

June's council meeting passed a motion to write to the Prime Minister similar to the one sent by the South Australian division. At the general meeting Mr Holt read his Presidents report and was returned as President.

July's meeting read a letter from the Victorian Division which asked us to "ratify their actions as defined in Conference report and to give them power to act for us." A motion was passed after considerable discussion that the West Australian division support the request from the Victorian Division. The lecture was on Solar Eclipses.

August's meeting welcomed four new members and set new membership fees. They were 10/6 for members, 5/- for cadet members and 5/- for country members unable to attend meetings. A letter was received from the Secretary Trans Pacific Radio Test Committee "asking our co-operation in conducting Trans Pacific tests." It was agreed to co-operate but to explain that "we have done nothing in 200 metre line yet." This is the first minuted mention of a frequency. The 200 metre band is in the current AM broadcast band and just below our 160 metre band.

September's meeting welcomed two new members and finalised the membership fee of 5/- for country members who could not attend meetings, These country members would be at the discretion of Council. The lecture was on "early experiences with Wireless." Early experiences of Wireless in 1922!

October's meeting moved to "arrange all details for a radio concert and exhibition." One application for membership was followed by a lecture by Mr Nossitor "on the Wallal Expedition. This proved very interesting and being illustrated with lantern slides made it one of the best lectures yet delivered." Just what was the Wallal Expedition? Was it amateur radio related? An internet search located Wallal on the on the Eighty Mile Beach on the north west coast of Western Australia some 1,500 km north of Perth, a very remote location way back in 1922. Further information came from Mark (VK6LZ & VK6ZLZ's son) that the Wallal Expedition was to observe the Solar Eclipse of 1922. Mr Nossitor was the Assistant Astronomer with the Perth Observatory. The Expedition travelled to Wallal Downs (a cattle station) by boat. The Perth Observatory has 1923 as the Solar Eclipse but I'm sure that's wrong.

Next page is a report on arranging the Wireless concert and Exhibition for 1st December 1922. From the minutes; "Adults 1/- Children 6p, Secretary to arrange with Taxation department re tax and to write Amalg Wireless and Controller of Wireless for permission. Also to write to H M (Head Master) Perth Boys School to obtain use of hall. Also to see Insp of Police re railings etc." The program:

7.30PM doors open
8.00PM Official opening
8.00PM Radio concert
8.45PM High frequency display
9.00PM Address by Head Master
9.15PM Demonstration ?
9.30 to 10.15PM Radio concert.

November's special council meeting at Perth Boys School further discussed the Radio Concert. Also a motion that "Mr Coxon be congratulated on his success in transmitting a distance of 160 miles." There is little mention in the minutes on technical matters but this 160 miles helps put the time period in perspective and how difficult and different radio communications were. The normal Council meeting and General meeting at the end of November admitted four new members further discussed the Radio Concert.

The December council meeting moved that reports of the concert be sent to "Sea Land & Air", "Electrical Times" and "Wireless Weekly". Letters of thanks to all concerned with the Radio concert were to be written. Two names were to be submitted to the Radio Inspector to act as Hon Radio Inspectors.

A motion in the December minutes is worth reproducing as written. "That a valve be purchased at a cost of (pound) 1/5/0 to replace one stolen from MrMcKinley's set during the Exhibition." The (pound) 1/5/0 equates to about $100 in today's money (at a guess).

VK7

Justin Giles-Clark, VK7TW
Email: vk7tw@wia.org.au Regional Web Site: reast.asn.au

VK7 Officially Changes from GMT to UTC

In the first week of September a bill was introduced into the Tasmanian parliament to move from Greenwich Mean Time to Co-ordinated Universal Time (UTC) in the Standard Time Act 1895.

VK7 BPL trail starts

Aurora Energy launched their commercial 6 month trial in the week beginning 12 September and a complaint has already been lodged with Aurora and the ACMA from Conrad, VK7HCK. The level of interference experienced in the Mt Nelson trial area has prevented him from operating on the HF bands. Watch this space! Measurements of this interference using Owen Duffy, VK1OD's FSM software are being taken and sent to the WIA for analysis.

If you believe you are being affected by BPL interference we suggest you take a listen to the sound files that are available on the REAST website. If these match the type of interference you are experiencing, and you wish to make a complaint then report it to the Aurora Energy, BPL Project Manager, Piero Peroni on Telephone: (03) 6237 3134 or Email: Piero.Peroni@auroraenergy.com.au and to the ACMA Regional Office in Melbourne on Telephone: 1300 850 115 or Email: saro@acma.gov.au

We encourage all amateurs and interested people to take a look at the REAST website and familiarize yourself with BPL technology, what it sounds like on the air and what it looks like on the poles.

Silent Key

Stephen Courtney-Pratt VK7ZSP passed away peacefully in early September. RIP.

North West Tasmania Amateur Radio Interest Group

Re-installation of the VK7RAE 6 m, 2 m, 70 cm & 23 cm beacons in their new location in the 7AD/SEAFM transmitter facility at Don Heads is progressing well. Andrew, VK7XR and Tony, VK7AX have installed the hardware and masting in preparation for the final commissioning. Thanks are due to Joe VK7JG for repair of the 70 cm beacon recently and the fitting of crystal ovens to the 70 cm and 6 m beacons thus improving stability of the beacon frequencies.

Northern Tasmanian Amateur Radio Club

From all reports the wine tasting/appreciation night went well and not too many hangovers were experienced, post the event...HIHI! JOTA this year looks to be very well supported in the North with a meeting to discuss this year's event attracting 9 people at the QTH of Tony, VK7YBG.

Radio and Electronics Association of Southern Tasmania Inc.

A big 'Get well soon' to Danny, VK7HDM, who was involved in a very serious motor bike accident in August. Our thoughts are with you Danny and Denise, take it easy and get well soon.

REAST are supporting three scout/guide groups this year with the Huon, Wellington and Clarence districts involved. Contact Rod VK7TRF or Roger VKXRN to assist with this wonderful opportunity to showcase ham radio to all those young people.

Four REAST members, Stu, VK7NXX, Peter, VK7TPE, Roger, VK7XRN and Ray donned their southwesters and headed for a location close to the Iron Pot Lighthouse for International Lighthouse weekend. Propagation was variable. However, 13 VK and one ZL lighthouses were contacted

WICEN successfully assisted with the communication on the Mt Lloyd Rally, part of the Tasmanian Rally Championship, run in the Maydena forests on the last weekend in August.

We thank Murray, VK7ZMS for providing REAST with a very interesting talk on the extensive Wireless Local Area Network (WLAN) that is being installed around Southern Tasmania. This 2.4 and 5.8 GHz network demonstrates the combining of both computer and radio technology. It was great to see so many people along to the night.

Murray, VK7ZMS giving the "low-down" on WLANs

Awards

Malcolm K. Johnson. VK6LC
W.I.A. Awards Manager

WIA 9 & 11 Band DXCC Awards, Official Release.

"Special issue only"

The WIA officially releases its new special issue 9 & 11 Band DXCC Awards complete and invites submissions for these Certificates.

We, the WIA, have the honour of being the first in the world to offer a complete DXCC range of awards.

Our awards have been developed to specially reward our present day DX Masters right here in Australia and catering for our next generation of "Master Dxers" and beyond 2020.

The 9 & 11 Band DXCC program has taken the WIA just over six months to develop, finance and deliver these new exciting challenges to our membership.

This completes our DXCC range of awards from Single Band to 3, 5, 9 and 11 Band DXCC.

They will extend into a new Multiband Program that includes all 11 approved bands including VHF.

New administration rules have been established and approved by the WIA Board of Directors.

The Australian DXCC "entity" bench marks were also reviewed for all multiband awards.

The awards have been developed incorporating sponsored, financial and legal graphic support.

These awards are not difficult to achieve, but they will require many hours and years of dedication in DXing and QSLing.

9 Band DXCC (9BDXCC)

"DX Master Award"

This Certificate includes any choice of 11 Band-modes from 2m to 160m.

They are available in Single or Open Awards. Deleted entities do not count for this award.

Honour Roll bench mark is set at 1508 and DXCC Excellence bench mark is set at 2110.

Individual progress award achievements are from 900 to 2200 entities.

11 Band DXCC (11BDXCC)

"DX Supreme Award"

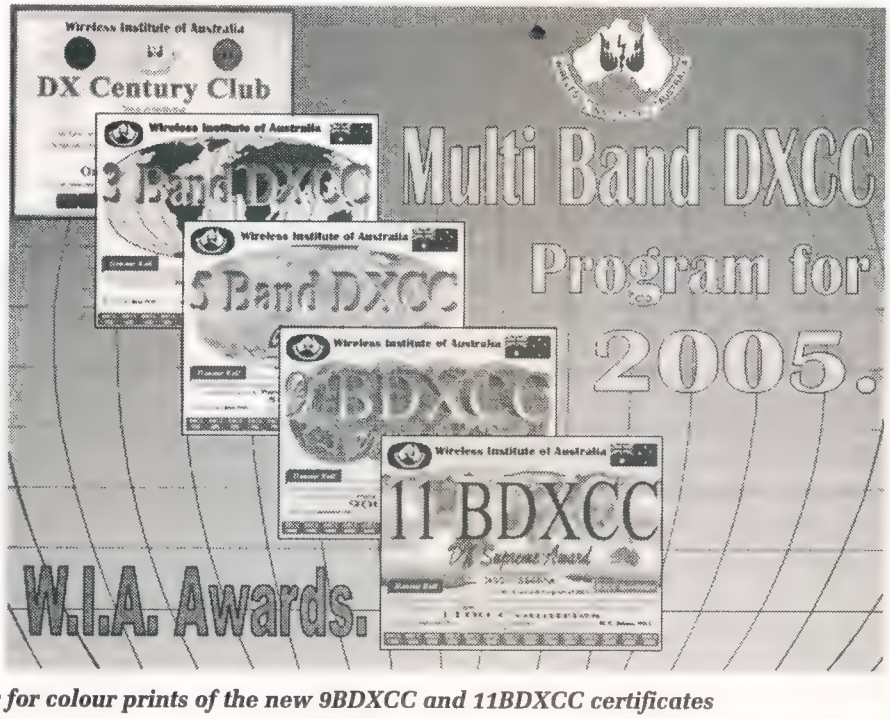
This Certificate includes all of the 11 Band-modes from 2m to 160m.

They are available in Single or Open Awards. Deleted entities do not count for this award.

Honour Roll bench mark is set at 1758 and special dispensation for VHF 2m. and 6m. set at 125.

DXCC Excellence bench mark is set at 2410 and special dispensation for VHF 2m. and 6m. set at 150.

Individual progress award achievements are from 1100 to 2500 entities.



See inside back cover for colour prints of the new 9BDXCC and 11BDXCC certificates

MultiBand DXCC Program (MBDXCC):

Our current DXCC single band "DXCC Standings" will be joined by the new "MultiBand DXCC Program" this will extend the performance over all bands. This new program should be ready for publication by the end of this year. The simple format will be to totalise all bands.

The minimum entry is 100 confirmed entities "Open" for each respective Band, excluding deleted entities.

Certificates

Our Special Issue certificates will only be produced as required and no stocks will be carried. When achieved they will be specially printed on a one-off basis. These are truly outstanding, colourful and have a world class identity, the best we have ever been able to produce. All of these awards are graphically designed for A4 (210x297) with an extended border to A3 (297x420) thickness 250gsm Colortech. Progress achievements labels are from 1300 to 2600 in increments of 100 entities, Honour Roll and DXCC Excellence self adhesive award labels are all designed complete for these awards.

The costs of these awards are listed and shown separately on the "Award Fees" page of the website.

The WIA Awards are the leading edge with this program, setting pace with the world and creating a mile stone for our National Radio Society 2005. You can also be very proud of this.

I thank our progressive WIA Board of Directors 2005, our financial sponsor "VK Classifieds" , certificate image sponsors Australian Bureau of Meteorology and "SSEC/UW-Madison" for their contributions.

These new certificates can be viewed on the National website along with all down loadable application sheets.

For those who prefer manual applications this package can be printed and posted at a cost.

Website: http://www.wia.org.au/awards/

email: awards@wia.org.au

Postal address: POB. 196, Cannington. 6987. Western Australia.

Please enjoy your DXing, be very proud of your achievements and display your award with pride.

ar

Spotlight on SWLing

Robin L. Harwood VK7RH.

Katrina's fury

The city of New Orleans along with most of Louisiana, plus parts of Mississippi and Alabama were hit by a severe hurricane on the 29th and 30th of September. It was called "Katrina' and thousands of people were killed, mostly from the surge that followed the hurricane when the levees broke their banks and flooded over 80% of the city.

Although warnings were issued prior to the arrival of Katrina, tens of thousands were trapped, unable to escape the fury. Law and order quickly vanished and anarchy reigned for many days until the National Guard plus other military assets poured into the devastated Gulf region. The whole city was eventually evacuated and this in itself presented a massive logistics nightmare. At deadline time, they have stated that it is going to be at least seven to nine months before people will be able to return.

Hurricane Katrina destroyed the communications infrastructure and both amateur and military networks quickly sprang into action. The amateur radio networks were quickly overloaded passing health and welfare traffic whilst the military were mainly concentrating on relaying government and other related services. These networks were heard easily here in Australia.

Because of Katrina's severity, all of the major radio and television networks within the region pooled their resources. Also one of the domestic American shortwave networks, World Harvest Radio in South Bend, Indiana, relayed this coalition to the wider US and to the entire World. I was hearing them well on 5835 at 0600 and it appeared to be an Internet feed as it was up to 70 to 90 seconds behind the MW stations.

Marine HF stations such as WLO in Mobile Alabama and WNU in Slidell LA were temporarily out of action as was the primary US Coastguard Commstat in New Orleans. Other coastguard assets were quickly brought into service to fill in the gaps. Religious broadcaster, WEWN in Irondale Alabama was mostly unaffected being further inland. The inactive WRNO transmitters and antennas were destroyed and are not likely to be replaced.

At the end of this month, daylight saving ends in Europe and North America on the 25th. This coincides with the southeasten states of Victoria, NSW and SA advancing their clocks. NZ and Tasmania advance theirs on the 4th of October. October 25th is also the date when broadcasters and other communication users change over their frequencies to compensate for altered propagation. I am also informed that there will be more DRM transmissions on the band.

Well that is all for this month. Until next time, good listening.

ar

NEW BOOKS

If you have the normal ham backyard space restrictions, these new books are for you:

The VK Antenna Handbook for Restricted Spaces

Packed with information on restricted space designs.

The NuBeam Antenna

A reduced size 2-element beam.

The TLV Antenna

A small footprint multi-freq vertical.

Also available in CD pdf format for quick searches.

For direct purchases

www.grimshaw.net.au

For credit card purchases

www.kvkantennas.com.au

or ph 07-3216 8060

ALARA

Christine Taylor VK5CTY

The ALARA Contest

Wasn't it fantastic? The conditions on air were the best anyone can remember. There were almost no atmospherics. No matter where you were you could hear on 80-metres and be heard almost perfectly. What great conditions for our thirtieth anniversary year.

I do hope you entered. I hope all YLs and most OMs entered the friendly Contest. There was time to have a natter and exchange news and weather conditions, just as we do on the Monday night Nets each week.

The triple points available from the few early members in the Contest were another bonus this year. I heard two of the early members but I know there were one or two more. Remember to record those extra points. It could make all the difference.

Unfortunately I was otherwise engaged during the day so I didn't find any of the distant X stations although I heard that there were several on frequency. Maybe you were more fortunate than I.

Now all that is left is to write up your log and send it to Marilyn VK3DMS through alaracontest@wia.org.au

Another reminder

If you made contact with Gwen VK3DYL or Elizabeth VE7YL this year, on the Islands, from Vanuatu or Tonga, using YJ/Yl or A35YL, do remember to send your logs to Gwen through the QSL bureau or direct. She is busy writing out those she has received and would love to have more.

Propagation conditions were not great but quite a number of QSOs were made.

Again, reluctantly, Gwen has to admit CW does get through under bad conditions when voice simply does not!!

While we are thinking about logs for ALARA, why not do the same with your Remembrance Day logs. I am sure the Contest Manager would like to have ALL the logs this year.

A bonus for everyone

If you have made contact with ten or more VKYLs and there were five or more states among the callsigns you can claim an ALARA Award. Just send a copy of your list to the new Awards Manager, Kathy VK3XBA using kathyg@spacelink.com.au along with $A5 or 4IRCs and she will be delighted to send you the very attractive certificate.

The certificate has hand-coloured state emblems surrounding the information, so will be a decorative addition to your Brag Wall.

The contacts you claim can be from the ALARA Contest, or one of Gwen's International DXpeditions, or just through normal contacts on air. They cannot be through repeaters or part of a NET but YLs on the Monday Nets are always willing to stay back at the end of the Net to give you the extra contact you need.

The ALARAmeet in Mildura

Many YLs are preparing to be in Mildura soon for the ALARAmeet and by the time this column appears it will all be over. The only thing over which there is no control is the weather, so I will let you know what that was like next month.

To anyone who thought about it but didn't go this time, I say, try even harder to be there next time. You will have a great time meeting people you have heard on air or heard about. At my first ALARAmeet I was still a Limited Licensee, so I had never spoken to anyone from interstate, before. I met YLs there who are still my friends. It happens!

The 222 Net

Although we are not at a good part of the propagation cycle, judging from the conditions during the ALARA Contest, there should be a number of the DX stations able to be heard.

Certainly I recommend you listen and participate in the 222 Net on Monday afternoon at 0530 Zulu before Daylight Saving comes around. That seems to upset all our calculations because the times change on both sides of the world at about the same time. We never know whether others have to get up earlier or stay up later to be there. So give it a go now, rather than later.

ar

Florence McKenzie Trophy presentation.

At ALARAmeet 2004 Marilyn VK3DMS, as ALARA contest manager, presents a special plaque to Pat VK3OZ. Pat won the Florence McKenzie Trophy for 4 of the last 5 years that the trophy was awarded.

Pat took the Florence McKenzie Trophy home from the Murray Bridge ALARAmeet in 2002, however the actual trophy, which is quite large, is now on permanent public display in Glenelg, SA. Pat will be able to have her new, much smaller, 'Morse Key' trophy on display where previously she had the Florence McKenzie Trophy.

ar

Bill Magnusson VK3JT

Can you help the AMSAT Website Technical Review Team?

The satellite scene is very dynamic these days. The AMSAT-NA website contains, along with breaking news, plans for new birds, information regarding long term projects, satellite commissioning updates, FAQs for beginners, links to other information sites and essential day-to-day data for all users. It's a wonderful resource for newcomers and experienced operators alike. The site gathers together material from a wide range of sources and on (fortunately) rare occasions it can be contradictory. Recently some inaccuracies have been pointed out in some of the technical material on the web site. A full check is well beyond the capacity of any individual so, in response to members' concerns a "Website Technical Review Team" had been assembled to look into the matter. This announcement was made in August and it's worth including here in full. Take particular note of the appeal near the end. If you become aware of any technical flaws in the material on the web site, I'm sure the team would like to hear from you. Proof reading is an onerous task at any time and technical proof reading is even more so. Sometimes something can slip by even a 6-strong team of "eagle-eyes". Here is the announcement.

Barry Baines, WD4ASW, AMSAT's VP-Marketing & User Services is pleased to announce that our Website Technical Review Team, under the leadership of Gould Smith, WA4SXM has been formed. Gould serves as Director-Field Operations and is the author of a number of AMSAT books. He is well qualified to handle this important task with the assistance of a very capable team that he has formed. The team that Gould has developed consists of AA2TX, KO4MA, KQ6EA, N8FGV, and VA3DB. The team has begun a systematic look at the content of the AMSAT website for technical issues, and is assigning a priority to identified items. The first areas the team is addressing are the Glossary and the Mode J operation articles. When appropriate, they will seek input from other individuals who may be knowledgeable in particular areas. Two members of the team will OK articles for technical content with final approval from Gould before he forwards them for inclusion on the website. "Our team is excited about updating the technical content of our website" says Gould Smith, WA4SXM. "However, this will take some time and will require thoughtful evaluation. In looking at the Glossary for example, we have found through our initial research that even the experts sometimes disagree on proper definition of technical terms. We want the AMSAT website to be a trusted and reliable source." Emily Clarke, W0EEC serves as Director-Website and will be working closely with Gould to implement changes as they are developed. Should website visitors wish to suggest areas of current website technical content for the team's consideration or be interested in submitting suggested technical changes or updates, they can do so by contacting Gould Smith, WA4SXM using his AMSAT e-mail alias. Please put 'Website Technical Review' in the subject line. The above was submitted by Barry, WD4ASW.

Updated version of SatPC32 released.

I reviewed this satellite tracking program some months ago and decided at the time to stick with my traditional software. As is the case with all well supported software, the author has been busy incorporating suggestions from users. Result ... Erich DK1TB has now released version 12.4 of SatPC32 and it can be downloaded from the author's personal web site http://www.dk1tb.de/indexeng.htm

The new version has some interesting new features, which will appeal to many users. The setup of the SatPC32 programs has been simplified. Updating of Keplerian data has also been simplified. Some CAT interfaces don't require an external power source but are fed directly from the COM port. To power such interfaces SatPC32 can now optionally switch the RTS pin to +12 V (+5 V for a USB-to Serial adaptor).

The new version also includes a new "Sun and Moon" tracker. After SatPC32 v12.4 has been tested "in-the-wild" for a month or two the program will be made available on CD. If you encounter a bug in the 12.4 version, please immediately inform Erich, DK1TB by email dk1tb@amsat.org. He has generously donated SatPC32 to AMSAT-NA, AMSAT-UK, and AMSAT-DL. If you use SatPC32, please purchase a registration code from one of these groups. All of the purchase price will go to support amateur satellite programs. Note: The "demo" version requires the user to enter the station data each time you start the program. Otherwise it is fully functional. The download file is about 10 Mb long.

The AMSAT group in Australia

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. No formal application is necessary for membership and no membership fees apply. Graham maintains an e-mail mailing list for breaking news and such things as software releases. Contact Graham if you wish to be placed on the mailing list.

AMSAT-Australia Echolink Net

The net meets formally on the second Sunday of each month. Anyone with an interest in Amateur Radio Satellites is welcome to join in and take part. Graham VK5AGR acts as net controller. The net starts at 0600UTC and you can join in by connecting to the AMSAT conference server.
All communication regarding AMSAT-Australia matters can be addressed to:
AMSAT-VK,
9 Homer Rd,
Clarence Park, SA. 5034
Graham's e-mail address is:
vk5agr@amsat.org

"Oh to be in England now that SSETI's there"

With apologies to Robert Browning

Howard G6LVB made this announcement last month prior to the launch of SSETI Express.

"In recognition of the effort put in by AMSAT-UK into the SSETI Express mission, I am delighted to announce that interested parties from the amateur satellite community have been invited to attend the launch event in London at the Institute of Mechanical Engineers at 1 Birdcage Walk, SW1H 9JJ on the morning of 27 September 2005. There will be live video feeds from the launch site as well as an attempt to receive signals from the satellite itself, due to be overhead and transmitting (if luck is on our side!) about 2.5 hours after launch. Although the launch is scheduled at 06:52:26Z (07:52:26 local BST), there will be replays of the launch during the morning. Best of all, it's free!".

Thanks Howard, I include this in the column for interest sake as the event will be over by the time this column is read. I hope it was well attended. I for one would loved to have swelled the ranks too. Great venue, pity it's half a world away.

By the time this column is in the hands of readers SSETI Express will have been launched and should be undergoing commissioning. We wish it well and hope it will eventually contribute to amateur radio satellite communications.

Congratulations to the workers at AMSAT-UK who stepped in at short notice to help make it all happen. The SSETI Express project drew heavily on the expertise of a number of senior AMSAT personnel during the early planning stages and again towards the end. The above event and the item below indicate that the effort did not go unnoticed.

Details of the SSETI Express telemetry download competition

Recently it has been mooted that some sort of telemetry download competition might be conducted in conjunction with the SSETI Express launch. The worldwide amateur radio satellite community represents a huge resource for the capture of telemetry information. The competition should encourage a wide response and a very worthwhile prize is being offered. Here are the details as released by ESA a couple of weeks prior to the expected launch date. The message was posted on the AMSAT-NA bulletin board by Graham G3VZV on behalf of AMSAT-UK.

"The Education Department of ESA, the European Space Agency, is delighted to announce details of the award that will be offered to the amateur radio community in relation to the downloading of telemetry from their SSETI Express student built satellite.

The award will be given to the amateur who submits the largest number of valid telemetry and payload packets regardless of which band it is received on.

SSETI Express is scheduled for launch on September 27th from Plesetsk in northern Russia at approx 06:52 UTC. It will downlink telemetry and payload data in AX25 format at 9k6 on 437.250 MHz and at 38k4 on 2401.835 MHz. It will later also be available for radio amateurs to use as a single channel FM transponder.

All radio amateurs around the world are encouraged to download the necessary software from the www.sseti.org/express website and to use the SERACC system to forward the telemetry and payload data to SSETI Express Mission Control. Submissions will be automatically recorded and the leaderboard will be shown on the website.

The winner will have the opportunity to visit the STEC06 Conference and Exhibition in Germany in Spring 2006. STEC, the Student Technology Education Conference, follows previous events in 2004 in Lausanne in Switzerland and in 2005 in Aalborg in Denmark. The three day event is similar to the AMSAT-NA Symposium and the AMSAT-UK Colloquium but with more breakout technical sessions in addition to the Keynote Speeches. The meetings are interesting and thought-provoking and enjoyed by all the attendees.

The post meeting attitude adjustment sessions have also proven to be exciting. The winner will also be encouraged to present a paper on how he/she achieved their success - but this is not mandatory! In addition to attending the STEC 06 Conference, the winner will be invited to visit ESA's Mission Operations Centre - ESOC - near Darmstadt in Germany where they will be given a private escorted tour of the facilities. ESOC currently controls the many exciting orbital and deep space ESA missions and will be responsible for the European Columbus module when it joins the International Space Station.

For more information check http://www.stec2005.space.aau.dk/. To see what this year's event included and for a few details of the ESOC facility, visit http://www.esa.int/SPECIALS/ESOC/ The winner will be the amateur at the top of the leaderboard at 00:00 on Jan 1st 2006. The prize will include economy class travel from your home, accommodation and a small daily subsistence allowance".

AMSAT-UK wishes to congratulate and thank ESA for their generous prize, a first in the field. It will add to the enthusiasm for the SSETI Express project that already exists within the amateur radio community. It will be a great opportunity for us to demonstrate that the amateur radio groundstation "network" is a valuable resource for satellite projects, which are able to include useful amateur payloads.

PCsat2's PSK31 tests users to the limit

The PSK31 feature on PCsat2 is proving very popular, but it represents a huge challenge. PSK31 is an unfamiliar mode to many operators and to fully understand this challenge you need to be familiar with PSK31 as a mode and also the problems of accurately tuning for changing Doppler shift in satellite operation.

PSK31 is one of the "sound-card" modes where most of the clever stuff goes on inside your computer. It is commonly used on HF where it has enjoyed some advantages over CW and other digital modes. This situation is changing, as more and better digital modes become available. In essence it creates a narrow passband around the received frequency.

The passband is confined to the combined audio response of your

receiver and the computer sound card. In general this amounts to about 3 kHz. The bandwidth of individual signals within the passband is very narrow, typically around 31 Hz, hence the mode name. There is plenty of room for a dozen or more contacts to be going on in this passband even if everyone's transceiver is tuned to exactly the same frequency.

The mode lends itself to applications where limited bandwidth is an issue. Efficient use of available bandwidth is always an issue in satellite operations. Stability and accurate tuning is a must for successful PSK31 operations.

Herein lies the challenge. Signals from all satellites are Doppler shifted to some degree. In the case of Low Earth Orbiters (LEOs) we have a worst case scenario. PSK31 is intolerant of any frequency changes outside a few Hz. If you have tried to conduct a contact on SSB over a LEO you will appreciate that you may need to devote one hand permanently to tuning the signal to keep your contact on the original frequency. Trying to do this manually has proved to be very difficult indeed and much thought is being devoted to solving the problem using computer automation. Software has been developed recently that can cope with an SSB contact on even fast moving LEOs but so far no-one has come up with something to make PSK31 a breeze. The current software and indeed the current batch of radios just aren't up to the job.

Here is part of a discussion, which has been developing on the AMSAT-NA bulletin board on this very subject. I think it will go some way to revealing how difficult the problem is for software developers. But it's challenges like this that spur amateurs on to do the necessary head scratching. Perhaps in the near future we will have software to cope with this situation and another mode will be added to our armory.

We are indebted to Bob Bruninga for his foresight in giving PCsat2 its PSK31 capacity. In this message, Peter G3PLX has set out some of his thoughts on the matter. It's great to be able to watch the development of new ideas and new software as they happen. Over to Peter.

"Quite a bit more activity today (on PCsat2), but as far as I know, no two-way QSO. Most stations still seem to be mesmerised by hearing their own signals drifting far faster than they can handle, and have not yet moved on to the problems of simultaneously receiving another station. I predict that there will very soon be a demand for Doppler tracking aids that can handle the PSK31 uplink Doppler correction requirement.

There are several ways this could be done. If we just think of using existing Doppler correction software, then it needs to handle a step size of the order of 1 Hz and a Doppler rate of about 14 Hz/sec maximum (for ISS). I suspect that this may be beyond the capabilities of some of the presently available programs, and may be beyond the ability of some presently available transceivers.

The stepsize and the update rate are the problem areas. At least one station has tried with a 10Hz stepsize system and it's not workable. If a 1 Hz stepsize radio existed, it would need to have its frequency updated at least 14 times per second.

Another solution is to extend the capabilities of the PSK31 programs. One way to do this would be to incorporate a link between such a PSK31 program and an existing Doppler tracking program, so that the PSK31 program can slide the transmitter audio tone frequency up in the required manner. The tricky part here is that we still need the 1Hz stepsize and the 14 Hz/sec rate, and, as I said above, the current Doppler tracking programs may not have this resolution.

One way round this might be for the PSK31 program receiving the Doppler data, at for example 10 second intervals, to interpolate between the frequencies provided in order to 'smooth out' the frequency of the transmit audio tone. This might require that the Doppler program calculate frequency values ahead of time, for example 5 secs ahead if the PSK31 program was going to linearly interpolate over 10 secs. This solution would be limited to uplinks where the total Doppler swing was less than about 2.4 kHz, in practice to uplinks below 30 MHz. Both of the above solutions are 'open loop', and could be applied to automated uplinks.

Another way to solve the PSK31 uplink Doppler correction requirement is the way I am doing it, where the transmitting station feeds-back the Doppler correction from reception of his own downlink signal. This solution is unique to the linear-up/FM-down transponder scheme and can be implemented entirely in software for uplinks below 30 MHz. The advantage is that it doesn't need Keplers but the disadvantage is that it does require the sender to transmit continuously, and QRM of the sender's downlink can disrupt the tracking, so it's not a solution that can be applied to an automated uplink, only to a manually-operated one. I have verified that a second-order AFC loop is quite capable of handling any Doppler drift likely to be experienced. This kind of loop is not stressed by Doppler drift rate itself but there are limitations on the double-rate-of-change of Doppler that such a system can handle. The maximum that PCSAT2/ISS presents for this parameter is +/-0.23 Hz/sec/sec on an overhead pass. There are two critical points about 25-30 seconds each side of TNA.

My scheme would appear to handle this well on a simulated signal, but since I never get an overhead pass from the ISS here, I can't verify that on the real ISS. The worst I experience is 0.14 Hz/sec/sec. I believe we should actively solicit designers/programmers to tackle this project urgently, drawing attention to the problem and providing the details needed to make sure that these guys can come up with usable solutions within the lifetime of PCSAT2. If we don't tackle this soon, I think the users will migrate away from PSK31 on PCSAT2 and swap to other wider-bandwidth modes where the Doppler shift problem does not need to be solved. The result will be a far less efficient use of the transponder bandwidth.

I do not have the capability or desire to do this kind of mass-market software myself. I am just an experimenter. I am very willing to pass on the results of any of my experiments to others. This is how I worked with the original PSK31 systems. I just demonstrated that it could be done (in software on a soundcard/PC), and the end-user programs were written by others far more skilled in this task than me".

Thank you Peter for some valuable food for thought. Congratulations on your past record. Here's hoping someone with the necessary skills will rise to the occasion this time. In closing Peter asked that his ideas and appeal for ongoing help and interest be publicised where possible. Consider it done!.

ar

Over to you

A word of thanks

Having my article on DRM published in the August AR has brought to my attention in a new way just how much effort you put into the publication of AR each month. It is easy for us on the receiving end to take all your efforts for granted.

I know I wait for AR to be delivered each month but normally do not give much thought to the effort needed to produce it month after month.

So just a brief note of thanks, appreciation and encouragement.

I have received quite a few comments from fellow amateurs who have appreciated my article. I expect the same would apply to most, (more likely ALL) the articles published each month.

Your effort is appreciated, many thanks.

John L Cartmill, VK4BJ

Hurricane Katrina

You may already have seen the following and other similar reports

However I've copied it below F.Y.I. It contains elements that could be worthwhile getting into local amateur radio publications/broadcasts and the public media.

John Costa VK3JCA

As telecom reels from storm damage, ham radios hum

With Hurricane Katrina having knocked out nearly all the high-end emergency communications gear, 911 centers, cellphone towers and normal fixed phone lines in its path, ham-radio operators have begun to fill the information vacuum. "Right now, 99.9% of normal communications in the affected region is nonexistent," says David Gore, the man operating the ham radio in the Monroe shelter. "That's where we come in." In an age of high-tech, real-time gadgetry, it's the decidedly unsexy ham radio -- whose technology has changed little since World War II -- that is in high demand in ravaged New Orleans and environs. The Red Cross issued a request for about 500 amateur radio operators -- known as "hams" -- for the 260 shelters it is erecting in the area. The American Radio Relay League, a national association of ham-radio operators, has been deluged with requests to find people in the region. The U.S. Coast Guard is looking for hams to help with its relief efforts. Ham radios, battery operated, work well when others don't in part because they are simple. Each operator acts as his own base station, requiring only his radio and about 50 feet of fence wire to transmit messages thousands of miles. Ham radios can send messages on multiple channels and in myriad ways, including Morse code, microwave frequencies and even email. Then there are the ham-radio operators themselves, a band of radio enthusiasts who spend hours jabbering with each other even during normal times. They are often the first to get messages in and out of disaster areas, in part because they are everywhere. (The ARRL estimates there are 250,000 licensed hams in the U.S.) Sometimes they are the only source of information in the first hours following a disaster. The hams also get little respect from telecommunications-equipment companies, such as Motorola Inc. "Something is better than nothing, that's right," says Jim Screeden, who runs all of Motorola's repair teams in the field for its emergency-response business. "But ham radios are pretty close to nothing." Mr. Screeden says ham radios can take a long time to relay messages and work essentially as "party lines," with multiple parties talking at once. Says Mr. Leggett at the Monroe operations center: "We are the unwanted stepchild. But when the s– hits the fan, who are you going to call?"

SOURCE: Wall Street Journal,
AUTHOR: Christopher Rhoads
christopher.rhoads@wsj.com]
http://online.wsj.com/article/0,,SB112597561578132422,00.html?mod=todays_us_marketplace

Silent Keys

The WIA has been notified that the following members have recently become Silent Keys:

- Robert Leslie Parnall VK3TLC (Moe, VIC)
- Stanley John Hutchison VK2FFF (Mona Vale, NSW)

Clarke & Severn Electronics

Components
Coils- Inductors-SMT Transformers
Varactor diodes Ð Microwave tuning Elements
Trimming Capacitors Ð Mica Film Ceramic Air
Alignment tools

Adapters & Matching Pads
50 & 75 ohm combination
PL259
N type
BNC
SMA
F type
TNC

Commercial Grade
Audio Receptacles – mini XLR connectors
Various size Audio Jacks & Plugs
Standard & Miniature RF connectors

Broadcast Quality
Amplifier modules Ð DC to 8GHz
Attenuators – Variable /Step / Digital
Power Splitters & Combiners
Directional Couplers - 5MHz to 3GHz
Filters – Band Pass & Band Stop
RF chokes & Transformers
VCOs

Specialists in Quality products

www.clarke.com.au

Email sales@clarke.com.au Ph 02 9482 1944 Fax 02 9482 1309 ALL MAJOR CARDS ACCEPTED

Contests

Ian Godsil VK3JS
WIA Federal Contests Co-ordinator

Contest Calendar October – December 2005

Oct	1	PSK31 Rumble	(PSK)
	1/2	Oceania DX Contest	(SSB)
	8/9	Oceania DX Contest	(CW)
	10	10-10 International Day Sprint	(All Modes)
	15/16	JARTS WW RTTY Contest	(RTTY)
	16	Asia-Pacific Sprint Contest	(CW)
	16	RSGB 21/28 MHz Contest	(CW)
	29/30	CQ WW DX Contest	(SSB)
Nov	12/13	Japan Intl. DX Contest	(SSB)
	12/13	Worked All Europe DX Contest	(RTTY)
	12/13	Spring Field Day	(VHF+)
	26/27	CQ WW DX Contest	(CW)
Dec.	26 to mid-Jan 06	Ross Hull Memorial VHF Contest	(VHF+)

Greetings to all Readers

Last month I asked you to start thinking about the future of contesting in VK and mentioned some starting points.

This month I would like to refer to a letter received about mid-year from Ernie VK3CEW. Below are some of Ernie's thoughts, and there is a lot of sense in some of his suggestions.

1. " ..it is along time since the majority of VK amateurs have been anywhere near 'active enough' on any band/mode, for whatever reason, and I suspect we may never see a 'satisfactory' level of participation again."
2. "In terms of contests, I frankly think there are TOO MANY small, almost insignificant, VK contests.

   We should aim to make a couple of them meaningful to THE WORLD – for instance the Oceania, RD, ANARTS (for digital folk) and leave it at that. Ensure they are all scored correctly by all major logging programs and ensure entry is only (yes, only) by electronic means, so they can be scored and results published sooner rather than later. Make them 48 hour jobs to cater for a worldwide audience."
3. "I should also add that I would keep the John Moyle, with GREATLY IMPROVED AND COMPUTER-CAPABLE SCORING as our major field day-type activity."

Again I ask you to think about the points raised and to offer support or alternative suggestions – remembering that we can do two things to further contesting over the next few years: (a) we can do nothing, let things continue as they are (a very easy option at any time, and one which will probably see the slow running down of the present system); or (b) make some changes over the next year or two and keep refining until we have something that seems to appeal to as many as possible.

To coin a phrase:
Please don't delay,
start thinking today.

Oceania Time is with us again. As you know, the Oceania DX Contest is currently THE world-wide DX contest to interest overseas stations in our part of the world. The operators are there, they just want to hear from US.

Being a WW DX contest, the contest loggers support this event and it is a requirement that logs be submitted in the Cabrillo format. The loggers will do this for you, so please get used to using one. If you don't know where to start, try Super Duper (SD) available from http://www.ei5di.com This is a Windows program, as are most of the other contest-specific loggers. However, many shack logging programs also have a contest module which may well be suitable for DX contests. Good luck and good contesting.

73, Ian Godsil VK3JS

Plan ahead

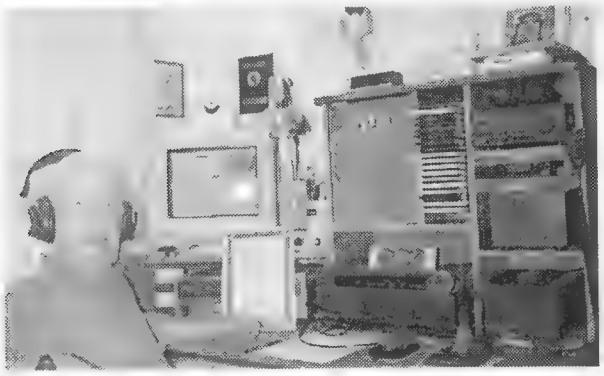
Ross Hull Memorial VHF Contest

Starts Boxing Day

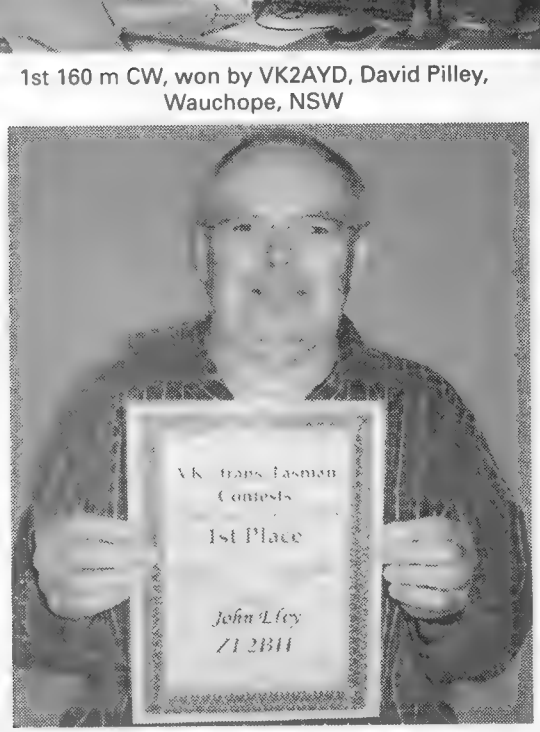
Trans-Tasman winners

Bruce Renn VK3JWZ,
Contest Manager

1st ZL - 160 m Phone. ZL2AS Multi-operator station, Branch 13/Taupo, comprising (from left to right) - ZL2CF Colin Lee, ZL2VM Michael Bull, ZL2DW David Walker



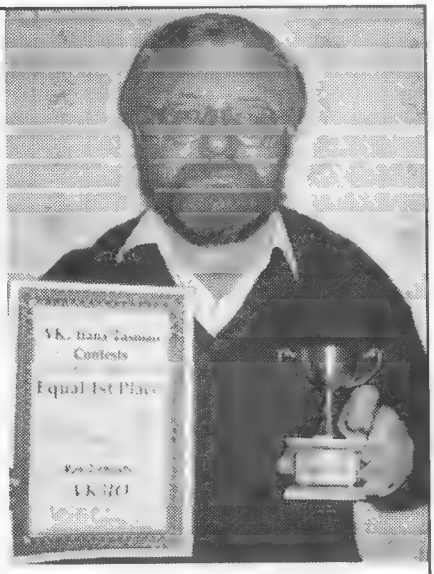
1st 160 m CW, won by VK2AYD, David Pilley, Wauchope, NSW



Winner of the 160 metre QRP Phone Category, John Levy, ZL2BH. John can't remember ever winning a prize in a Contest before, and was very surprised to win this one.

The 2005 VK/Trans-Tasman Contests, 160 metres Trophy Winner for the second consecutive year was Ron Tremayne VK3IO from Cockatoo with a Single-operator score of 2203. He was Equal 1st with VK7CHT from Bruny Island, with a Multi-operator score of 2232.

The Trophy was awarded under the "Multi-operator Rule" requiring VK7CHT to beat Ron's score by 100+, to win the Trophy. Both stations were awarded a Certificate for "Equal 1st".



160 metres Trophy Winner, Ron Tremayne VK3IO

VK3FRC multi-operator team (led by Roy Seabridge, on right), who were 3rd 160 m Phone.

Additional photos of place-getters will be published on the Contest URL, http://home.iprimus.com.au/vktasman, as they come to hand.

ar

JOTA 2005

October 15 /16 2005

DX News & Views

VK4OQ,
P.O. Box 7665, Toowoomba Mail Centre, QLD 4352.
E-Mail john.bazley@bigpond.com

Andaman and Nicobar Islands

Andaman and Nicobar Islands were in the 'top ten' most wanted list for many years, and after the recent Amateur operation there are still many who still need a QSO. Encouraging news has been reported from several sources. It is beginning to look as though we may expect amateur activity from the Islands again next year, if a Hamfest takes place as planned.

Government officials who, along with Bharathi, VU2RBI and NIAR representatives, attended Dayton Hamvention 2005 and Hamradio 2005, held at Friedrichshafen, have made favorable proposals to the Government of India, to further promote amateur radio activity in that country, to include permission for foreign amateurs to operate from VU4 and VU7 during a planned Hamfest and also thereafter. The officials now wish to know, from NIAR, how many amateurs will seriously consider attending such a Hamfest, if it is organized in these Islands.

NIAR are proposing to stage a 3-day Hamfest in Port Blair, Andaman Islands between 25 December 2005 and 10 January 2006. NIAR asks amateurs interested in attending to e-mail Prof. Ram Kapse, Lieutenant Governor, Andaman and Nicobar Islands, Port Blair, India (lg@and.nic.in, ramkapse@and.nic.in), and please also send a copy to NIAR (vu2nro@gmail.com)

NIAR says that "all requests to operate from the Andamans and Nicobar that are sent to the Lieutenant Governor of A&N should very clearly express the wish to operate from A&N as an important motive to visit A&N for the Port Blair Hamfest. A permit to operate from there, as a foreigner, will depend on the number of requests the Lieutenant Governor receives".

It will be interesting to see how this develops.

So what have we got to look forward to in October, particularly with CQWW SSB Contest taking place during the last full weekend of the month. A number of DXpeditions have already announced their plans and undoubtedly others are still in the planning stage.

What do the really serious Contest DXpeditions look for? They really want three things – good conditions (don't we all) – as many '3 point QSOs 'as possible (that is stations outside their continent) and Country and Zone Multipliers. If you are going to participate seriously then I believe the old adage still applies ' go for bulk on the first day and quality the second'.

For those of us who are chasing new countries, Contest DXpeditions offer a big advantage compared to the 'normal' DXpedition, as the participants will endeavour to operate for the whole 48 hours of the Contest as every QSO counts. The non-Contest DXpedition on the other hand tend to concentrate on areas of population, but on the other hand occasionally you do get a group who will try to work areas for whom they know that the path is extremely difficult. For all of us there is undoubtedly an area that is very hard to work, either from a lack of amateur activity, the antipodes and/or a Polar path. This is one of the facets that makes DXing so interesting and challenging. Let us not forget those who do not like contests – they have an opportunity to work DX during contests, with less competition, on the WARC bands.

The following is the most up to date information that I can get for the Contest, up to the closing date for copy.

VP2EWX (Bill-W4WX), VP2EDP (David-WA4ET), VP2ECM (Cory-N1WON) and VP2EAZ (Clarence-W9AAZ) will operate from 25th October to 1st November including CQWW SSB.

P40W (John-W2GD), active from 26th to 30 October including CQWW SSB

From 25th October to 1st November will be activated by 8P9AS (Clint-W3ARS), 8P9DC (John-W3ADC), 8P9DX (Natham-W3ADX), 8P9HC (Hugh-WB6CBU), 8P9KS (Kamal-N3KS), 8P9LP (David-K3LP), 8P9LZ (Krassimir-K1LZ) and 8P9OP (Mike-N3VOP), they will be using the call 9P9R for CQWW SSB - QSL W3ADX.

V31MQ (Mike-WQ5C) will also be on from 26th October to 1st November- and during CQWW SSB.

VK9XD (David-VK2CZ) will be active from 25th October until 6th November and participate in CQWW SSB. QSL via VK6NE (vk6ne@upanaway.com)

J3A - various operators will be active during CQWW SSB,

KG4SB or KG4WW (José-N4BAA or and Bill-KG4WW), will be active from 25th October until 5th November including CQWW SSB

8Q7 will be activated by EA1DGZ, EA1DBC EA1AAW and EA1CNF.

HQ9R – Honduras will be activated by WQ7R during CQWW SSB. He will be there from 22nd October until 4th November

JW5E (CQWW SSB) QSL via JW5NM (jw5nm@online.no

6W1RY by F5VHJ

C6A activated by W2GJ and AA4V

St Martin by FS/AH8DX

Earlier this summer on their visit to the Azores, OH2BH and OH2PM met the local gang to arrange a project for contesting during the coming season. The station call will be CU2A.

N6TJ, Jim Neiger, continues his many-year Ascension Island activities as ZD8Z, October 26 to November 5 including the CQWW SSB contest, 20 metres only. Jim will do some CW after the contest, including some WARC band activity and 160M. QSL direct to VE3HO.

NP2B will be in the CQWW SSB as a multi with ops NP2B, WD4R, W4OV, W4DTA, W1RG, K9VV and maybe others. QSL via NP2B.

CN2R, operator W7EJ, Jim, will be in the CQWW SSB single op single band 40. He'll be on WARC and 160 before and after. QSL via W7EJ.

GD6IA, Isle of Man, with ops K1JB and K1EU, will be in the CQWW SSB, multi-single. QSL direct only, to K1EU.

Special Event Radio Station OO4CLM

Postbus 1006 - B-8300 KNOKKE-HEIST - BELGIE

On November 1st 1944 the town of Knokke was finally liberated at great cost of Canadian lives. Each year the fallen Canadians are remembered with ceremonies, festivities and an "Canadian Liberation March" on November 1st and that during the Canadian Week. Many Canadian and Belgian veterans, VIPs and radio-amateurs are participating in the events.

This year the Special Event Station OO4CLM (which suffix stands for Canadian Liberation March) will be on the air for the 24th time from Friday, 4th until November 8th 2004.

As a result of 175th the anniversary of Belgium it has been permitted us the prefix OO to use.

Beside our own ham-operators the Special Event Radio Station is operated by members of the BAFARA (Belgian Airforce Amateur Radio Ass.), by members of the BMARS (Belgian Maritime Amateur Radio Soc.) and by operators of the ONZ-YLC.

Again a multi-coloured OO4CLM-Award will be available to all licensed amateurs and SWLs for any contact with this special event station. They also can get a beautiful QSL-card. Cost of the OO4CLM-Award is 5 IRC or 5 US$, with all proceeds going to a welfare fund. The money is used to maintain memorials and to keep the station OO4CLM next year in the air.

You can contact or listen to OO4CLM on the frequencies in Table 1.

Special thanks to the authors of The Daily DX (W3UR) - 425 Dx News (I1JQJ) and QTC DX PY2AA for information appearing in this month's DX News & Views.

Frequencies (in MHz.) OO4CLM

	80 m	40 m	30 m	20 m	17 m	15 m	12 m	10 m	2 m
SSB	3.685	7.045		14.145	18.150	21.245		28.545	144.250
CW	3.515	7.012	10.118	14.020	18.087	21.020	24.897	28.020	144.020
FM	145.475								
URL	http://www.on4clm.be								
Email	mailto:info@on4clm.be								

Table 1

Silent key

Peter Harrison VK6HH

Peter Ernest Harrison came into this world on 11th September 1928 and left us on 11th September 2005, aged exactly 77 years to the day.

Peter's fascination with radio began early, he started off experimenting with "cats whisker" crystal receivers. His father died when he was seven years old so he was forced to leave school at an early age.

At thirteen he was a Telegraph messenger at Frankston Post Office where he taught himself Morse and typing. At fourteen he told the authorities that he was sixteen and joined the Air Service Cadets where he taught wireless air gunners and trainee pilots Morse in the back room of Frankston Post Office.

After two years of this he was ready for the Air Force. However his mother intervened as he was only sixteen. As a result he joined Vic Rail where he ended up doing about three jobs because of the man power shortage during the war years.

Finally, at seventeen he was able to join the Royal Navy as a Telegraphist and there he stayed until 1948. It was then back to the PMG as Postal Clerk and Telegraphist where he served in Adelaide, Perth and Sydney. The Department of Civil Aviation was looking for radio operators at that time, so he started his career in Civil Aviation at Rose Bay Flying Base. From there he went to Parafield Airport in Adelaide and then transferred to Melbourne after meeting me on a training course.

In 1952 during the time of the Atomic Bomb tests at the Montebello Islands, radio operators where needed in Port Hedland so that's where Peter went. After two years he was promoted to Officer in Charge of Broome Airport. In 1956 a Cyclone devastated the town and all radio installations were blown away with the exception of the airport tower. Peter was able to relay urgent messages and was the only link with the outside world for over a week.

After a period of time at Perth Airport he returned to Port Hedland as Officer in Charge from 1968 to 1970. This was a time of intense activity as the town was changing from a pastoral port to a great mining centre. Peter transferred from Perth to Melbourne in 1971 to help with the re-structure of the Flight Service Department and in 1976 moved to Dubbo in central NSW as OIC. During his time in Dubbo Peter took an active interest in the "Orana Region Amateur Radio Club" and used to instruct the beginners in radio maintenance and morse.

In 1978 he was awarded the British Empire Medal for public service in the field of civil aviation. 1984 was Peters last posting to Adelaide Airport. He then retired to Perth in 1986 and became involved with the Trav Net through Arthur VK6ART who Peter had worked many times while travelling around the Eastern States.

When Arthur retired from the Net, Peter joined Roy VK6BO and for the last 18 years has helped run the Trav Net. During that time, Peter and I have enjoyed meeting and making friends with many of the Amateur Radio travellers who have ventured over to Perth.

I have received many messages of sympathy from amateurs around Australia and would like to take this opportunity to thank you all.

Jacqueline Harrison

David Smith VK3HZ – vk3hz@wia.org.au
Leigh Rainbird VK2KRR – vk2krr@wia.org.au

Weak Signal

David Smith - VK3HZ

Solar flare activity in mid August produced some auroral enhancement on the evening of 24 August.

Ian VK3AXH reports: "I first noticed Joe VK7JG mention aurora on the VK/ZL logger. I then worked him on both 6 m and 2 m at 5x5 SSB. From then on, there were many stations worked on 2 m including VK2KRR, VK5NY, VK3ZQB on SSB and on CW VK3UM and VK3AFW. From my place this activity lasted from around 8:15 to 11:30pm EST."

Ron VK3AFW reports: "I heard on the local AM radio that a listener in Ouyen could see the aurora. I went outside and could see cloudbank to the south and lots of scattered light, but no aurora visible here in the city. Checked the VK/ZL logger and saw a report of Ian VK3AXH having worked VK5NY with big signals via the aurora. Heard a strong signal from a VK5 - call not copied. Put on RIT set to -500 Hz and called CQ. Worked Colin, VK5DK, just before 1300 hrs UTC. Doug, VK3UM, worked Ian VK3AXH on CW. Some aurora effect on Doug's signal. I worked Ian on CW. Gavin VK3HY calling on CW, too close for any aurora effect."

Doug VK3UM reports: "I went outside at about 2230 EST and thought Moon was rising (in the south?) It was a spectacular Auroral visual display from the SE to SW and up to 60 degrees El. In almost 10 years at this QTH (with no lights) it was the first visually observed. Typical 'wedding cake' verticals ranging from blood red through pink white to green. Quite spectacular and bright enough to read a newspaper. Different to the bursts of 'light areas' that I have seen in northern SM. Unfortunately it did not last long and disappeared at about 2250 EST. Radio wise, quite disappointing. Massive noise bursts were recorded on 70 cm and 23 cm the previous day."

For those interested in portable operation and aircraft enhancement, Barry VK3BJM has created a web site detailing his exploits in these areas over the years. Steer your browser to www.users.bigpond.com/vk3bjm/

EME

From mid August until late September, Rex VK7MO was operational on EME from the islands off the west coast of Australia. Operation was restricted to only digital mode using WSJT JT65 and only a single long yagi was used. Initially, Rex was operating as VK9CMO from the Cocos Keeling Islands where he managed 67 contacts on 2 m and 3 contacts on 70 cm. In early September, Rex moved to Christmas Island under the callsign VK9XMO. As this report is being written, he now has over 100 contacts and still over a week of operating to go. Expect a full report on the trip once Rex returns. In the meantime, some photos of his setup are included here. Note his Az/El control system – a string from the rear of the yagi wound around a section of palm frond held down by a lump of coral. For El control, wind the string on or off the palm frond, and for Az control, move the frond and coral!

Spring VHF-UHF Field Day 2005

A note from John Martin VK3KWA, contest manager, advises that the dates for the Spring VHF-UHF Field Day are Saturday and Sunday November 12 and 13. Duration in all call areas other than VK6: 0100 UTC Saturday to 0100 UTC Sunday. Duration in VK6 only: 0400 UTC Saturday to 0400 UTC Sunday. For further details, contact John.

Beacons

A recent VK2 broadcast carried the news that the VK2RSY 70 cm beacon has failed and is now QRT permanently. A new beacon is under consideration.

Colin VK5DK reports that work has been carried out on the VK5RSE beacons on 70 cm and 23 cm. Hopefully there is a big improvement in stability and keying note. Colin welcomes any reports to him at vk5dk@internode.on.net

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

Digital DX Modes

Rex Moncur – VK7MO

Joe Taylor W1JT has announced a beta release of WSJT version 5.8.1. This is a major revision of WSJT, with many new features, rebuilt almost from the ground up.

New capabilities include:

- Built-in real-time waterfall display, usable in all WSJT modes
- DF of signal selectable directly from the waterfall display
- Selectable sound card
- Improved control of T/R timing
- Immediate decoding available after meteor "pings" in FSK441 mode or signal enhancements in JT6M mode
- No need to re-enter station parameters after a version upgrade
- 16-bit audio for better dynamic range
- Transmitted as well as received information saved
- Optional logging of QSOs (for contests, etc.) in file WSJT.LOG
- Continuously updated solar and lunar coordinates and Doppler information provided in a file usable by other programs

Many other program enhancements are still to come:

- Correction for inaccurate sound-card sample rates
- Improvements to decoders for all WSJT modes
- Non-saturating measurements of signal level in JT65 mode
- Open source policy for nearly all program code
- Relatively easy to port program to Linux or Macintosh

Version 5.8.1 is stable and very usable. A few familiar features present in version 4.x have not yet been implemented (for example, CWID and EME Echo mode). With many thousand lines of new code, it is likely that there are some new bugs.

Go to the WSJT Home page, http://pulsar.princeton.edu/~joe/K1JT/, to download the new program.

Please send any Digital DX Modes reports to Rex VK7MO at rmoncur@bigpond.net.au.

The Magic Band – 6 m DX

Brian Cleland – VK5UBC

August has been a very quiet month on 6 m. There have been very few reports of band openings from anywhere in Australia. Only Norm VK3DUT who has continued to get openings across the Tasman working Murray ZL3MH and Mike ZL3MF on 14 August and John ZL3AAU, Duncan ZL3JT & Keith ZL3RW on 15 August. Good work Norm. Norm also heard the VK7RST/b on AU on morning of 25 August.

SWL Dave from Adelaide reports hearing the Hunter Valley VK2RHV/b on 50.288 from 0756-0807z on August 11 and the Alice Springs VK8RAS/b on 50.046 from 0717-0744z on August 25.

The only other news of interest is from Wayne VK4WS who has been able to hear W1JJ via moon bounce and reports that Gary VK4ABW in Townsville has worked several stations via the Moon in August. Wayne says he can hear Gary on a half-wave vertical via Meteor Scatter when Gary's beaming at the Moon.

I've received requests for information of where to listen to assist newcomers to 6 m. Below is a list of Australian 6 m beacons that are presently operational.

50.046	VK8RAS	Alice Springs	CW
50.058	VK4RGG	Gold Coast	CW
50.066	VK6RPH	Perth	CW
50.087	VK4RTL	Townsville	CW
50.288	VK2RHV	Hunter Valley	CW
50.289	VK2RSY	Sydney	CW
50.293	VK3RMV	Wannon	CW
50.297	VK7RST	Hobart	FSK
50.306	VK6RBU	Bunbury	CW
50.345	VK4ABP	Longreach	CW
52.450	VK5VF	Adelaide	CW

There are other beacons either planned or not operating at present and I will advise of any updates. It is also useful to listen for Channel 0 TV, in particular, Toowoomba sound on 51.672 and Wagga sound on 51.740. The international call frequency is 50.110 with most SSB operation taking place between 50.110 and 50.200. For more information check the Australian Amateur Callbook.

10 m activity is starting to improve so hopefully 6m will start coming to life during September.

Please remember to send any 6m information to Brian VK5UBC at bcleland@picknowl.com.au.

St George ARC Auction

The *St George Amateur Radio Society* is having an Auction at the club's premises, First Kyle Bay Scouts Hall, Donnelly Park, Kyle Parade, Connell's Point, NSW 2221. on *19th November 2005* at 10.30am.

Enquiries: Brian, VK2GCE
President, St George ARS.
brianclarke01@optusnet.com.au

2 m & 70 cm FM DX

Leigh Rainbird - VK2KRR

While conditions were quiet during the first half of August, a few surprises were thrown in by mother nature for the latter part of the month for southern Australian operators. With 6 days of good conditions in a row, thanks to a slow and stable high pressure system with a good centre pressure, many now have their fingers crossed that it was a sign of what may be coming for us this summer! While it may have only been a freak of nature, we can still hope.

First up for the month was some activity for northern VK4 operators when in the evening of 15/08 the tropo picked up as reported here by Mike VK4MIK at Butchers Creek. "I went on air at 7.53 pm to contact Dennis VK4JDJ at Herberton and Gary VK4ABW at Blue Water, north of Townsville, both with good signal reports on 146.500 simplex. Russell VK4BEG at Lake Eacham then joined in, I also called in Ross VK4AQ, Innisfail. Felix VK4FUQ at Ingham was also readable off the back of his beam. John VK4FNQ at Charters Towers (305 km) also came in, as did Bill VK4WL at Mareeba who could not hear the others. It was passed around to get as many contacts with Gary as possible and later John. Ross had trouble hearing other stations but made contact with Gary, as did Dennis, Russell and myself. Signal strengths from Gary were at S6 - S9+. The maximum distance worked was between John VK4FNQ and Russell VK4BEG at 311 km".

Heading down south, from Monday evening 22/08 tropo picked up. Conditions built up each evening thereafter and peaked around Friday and Saturday evenings.

On Monday evening 22/08, after 10.30 pm, I was very happy to have made it to the legendary VK5RMB Murray Bridge repeater again (733 km) after such a long wait after the repeater was damaged by a lightning strike. Being a little worried about how the repeater would perform after the repairs, I soon had no fear about its ability when I realised this was the only repeater in VK5 that I was able to access. Amazing. Later on I was also able to access Crafers at 764 km, Barossa Valley at 741 km and Lobethal at 747 km, signals, mostly weak.

On 23/08 signals were again present from some VK5 repeaters, similar to the conditions from the previous evening. On 24/08 again same repeaters just in from VK5, but this time a contact on 146.500 with Gary VK3KYF from Mildura was available at 466 km, Gary was 5/7. Damien VK3HGY at Mirboo Nth made it to the Mt Gambier VK5RMG repeater at 474 km. While Damien could not raise any VK5's for a contact he did manage to raise Max VK7KY from the Tasmanian north coast.

A similar report again for the 25/08, but there was one BIG exception. At around 4 pm, Michael VK3KVW at Ballarat reports working John VK6ZN stationary mobile near Eucla in Western Australia via the 146.900 repeater at Mt Gambier, which is 1282 km for John across the Bight. The two then also made the contact on 146.500 simplex over the 1515 km path. Well done.

On 26/08 a Friday night special saw some pretty big signals floating about which was great. At 6 pm the Geelong repeater was 5/9+50 at 383 km, Otway Ranges was also 5/9+50 at 486 km. After 8 pm, VK5 signals started coming in again, the Renmark TV beacon on 143.760 FM was over 5/9+60 at 600 km.

After 9 pm signals started coming in from Broken Hill. Close to 10 pm the Broken Hill repeater on 147.000 was 5/7 signal at 638 km. I was able to catch up with Paul VK2YVG and Brian VK2DPG both from Broken Hill on their repeater. While I could not hear Paul on simplex, Brian was throwing in a good signal on 146.500 up to 5/7. The repeater peaked at 5/9+20.

The last good day was Saturday 27/08. Another big surprise was contacts made by Hayden VK7HAY portable at Mt Blackwood in northern VK7. At 2.26 pm and with a simple set up, Hayden was able to work the VK2RFS Mt Mumbulla repeater on 146.750 at a big 641 km, Hayden spoke to David VK2DE. Hayden also worked to the Bairnsdale repeater at 470 km, where he spoke to Ben VK3CBE and also to Mt Baw Baw at 445 km. Well done Hayden.

After 6 pm, I had repeater signals such as the following: Ararat 5/9+60 @ 410 km, Grampians 5/9+40 @ 471 km, Mt Macedon 5/9+60 @ 324 km, Mildura 5/9+20 @ 466 km. Able to access these (except Mildura) with only 2 watts from the rig. At 9.50 pm was able to work Les VK3TJ at Mildura on simplex, 5/5 at 466 km.

As a nice finishing touch, at 11 pm the Warrnambool 147.050 repeater was coming in at 5/9+20dB at 512 km, where I was able to work Michael VK3KVW and Ian VK3IDL from Ballarat and also Russell VK3ZQB at Port Fairy. Michael VK3KVW was also worked on 146.500 with a nice 5/9+40 signal. Russell and Ian were heard on reverse.

Please remember to send through any 2 & 70 FM DX reports to Leigh VK2KRR at vk2krr@wia.org.au

Silent key

Louis Arthur Jantke VK5LE

Louis was born on 29th June 1921 at Swan Reach, SA and lived on the same farm all his life.

In 1946 Louis married Joyce Grieger, their marriage was blessed with three children, Janice, Beverly and Steven.

Lou was a quiet achiever. He was a farmer as well as the local electrician. His interest in electronics began early, making his first crystal set at 14 years of age. He repaired many a wireless set and TV for people in the Galga district and beyond. It was always his own TV that had the snowy picture!

A keen amateur, Lou talked to people worldwide, delighting in using the Morse key. He was a life member of the Riverland Radio Club. He was the Secretary of the local Lutheran Church and Elder for a number of years.

Shooting was another passion, Lou won a number of trophies with the Barmera Clay Target Shooters Club.

Gradual loss of eyesight began robbing Lou of keeping active in all the things he loved to do. He also experienced deteriorating health over the past nine months, passing away on 19th March 2005.

He is survived by his wife Joyce, 3 children and his only sister Lorna.

Submitted by Adrian Reimann VK5AJR

The things we do

RD Contest

Alan Mason VK2GR

Allan, VK2GR, the Hills District Scout Leader, operated portable in the CW section of the RD 2005 Contest from Cataract Scout Park, near Appan.

The RD radio operation was scheduled between the first aid duty support at the annual NSW Scout Rally. During the rally, patrols of 4-8 scouts hike between the activity camps and participate in scored activities over the weekend. The male and female youth members are aged between 11 and 15 years. The scout patrols are self sufficient for the weekend except for water and the supervised cooking fires.

Allan and his wife Josette, also members of St John Ambulance, have been providing the first aid and medical support at all the major scout events in NSW for the past 10 years. The old workhorse radios used during the weekend were a TS120S and an IC720A, with the antennas being, a G5RV inverted vee and a 40 m helical mobile whip.

The G5RV loaded up surprisingly well on 160 m with VK2, VK3 and VK4 contacts logged."

RD at VK2WIA in the Hunter Valley

John VK2BBC operating and Steve Wright log keeping in the early morning before the cold set in.

Several amateurs from Sydney and the Newcastle area decided to get together and man a Remembrance Day contest station using the callsign VK2WIA. Jamie, VK2YCJ offered the use of the Luskintyre Tigermoth airstrip clubhouse facilities and it was also decided to extend an invitation to all interested radio amateurs, their families and friends to visit over the weekend. As well as radio and socialising activities, tours of the museum and workshops were run throughout both days.

A total of 25 people stayed the night at the bunkhouse, in caravans and tents. Those present partied on in to the small hours of Sunday morning. The total number of visitors throughout the weekend was around 70 and the station made a total of 460 contacts. Copious quantities of food and beverages were consumed and the BBQ dinner and breakfast was very popular with all attending. Epicurus would have been pleased to attend the weekend.

Most of those attending indicated they would be back next year for a much bigger and better weekend.

ar

VK5 Exam assessor training course held in Adelaide

Trevor Quick VK5ATQ

The first WIA Exam Assessors course was held in Adelaide on 27/28th August 2005. The picture show those who attended. The guide dog Neon is a useful addition to the assessors' ranks!

The course went very well and those who attended had great praise for the presenters Fred and Lorraine Swainston.

Above: *Left to right standing*: Alan Richardson VK5ARG and Neon the guide dog, Peter Watts VK5ZFW, Sasi Nayar VK5SN, Jim Tregellas VK5JST, Mike Turner VK5AMT, Gerard Rankin VK5ZQV, Keith Gooley VK5OQ, Jeff Farmer VK8GF, Andrew Williss VK5LA, Dean Whitehorn VK5ZDW, John Drew VK5DJ, Trevor Niven VK5NC, Fred Swainston VK3DAC,
Kneeling next to Neon, Mervyn Millar VK5MX, Ian Northeast VK5XE, Paul Hoffmann VK5PH, Barry Bates VK5KBJ, Noel Ferguson VK3FGN, (Chris Platt VK5JJJ and Peter Cockburn VK5TZX absent from photo)
Left: Neon, the guide dog

Ballarat Amateur Radio Group Inc

HAMVENTION

Sunday 6 November 2005

at the

Ballarat Showgrounds Wool Pavilion

Cnr Creswick Road and Howitt Street

(enter from White Ave, off Howitt Street)

DISPLAYS & SALES

start at 10am

Admission $6 (under 15 yo FREE)

Enquiries: Ian VK3AXH 03 5341 3012

email: igm@netconnect.com.au, vk3bml@barg.org.au

Beyond our shores

David A. Pilley VK2AYD
vk2ayd@wia.org.au

Everything seems to be happening in Italy this past month!.

If you have news from overseas, please email me and mark the subject BOS.

Italy

joins the no-code chorus

Another nation has joined the code free ranks. The word from Italy is that it is no longer a requirement for applicants for a ham radio licence to sit for a Morse qualification exam. According to listener Vinceinzo Ferrea, Italian telecommunications regulators announced the decision to abandon the code qualification on August 9th.

The Daily DX http://www.dailydx.com reported that current IW-prefix "no-code" VHF/UHF licensees in Italy will now be allowed operate on HF.

(ARRL News)

Italy

Rescue Radio: Red Cross says "yes" to ham radio

The Italian Red Cross will activate its first ever amateur radio station in October under the call-sign IZ4GQA. The pioneering new station is the brainchild of the radio communications department of the Italian Red Cross's Emilia Romagna region.

The department had been looking for a communication tool to provide wider coverage than existing radio networks, incur no fees and be capable of working in crisis and emergency situations.

An amateur radio station appeared to be the perfect solution, but at the time the Italian Red Cross had never before been authorised to operate such a station. Not to be put off, members of the radio communications department obtained a copy of the official Italian amateur radio regulations and submitted a seven-page application for a licence to the Italian ministry of communications.

The application was successful and the Italian Red Cross was given the green light to operate an amateur radio station. An Italian Red Cross spokesman said: "Now we can communicate on all ham bands, being able to connect Red Cross stations not only in our region, not only in Italy, but all over the world."

(ARNewsline)

UK

Restructuring commentary period ends

The time for UK hams to submit comments on their governments latest restructuring proposal ended on the 18th August. It was one of the longest and most comprehensive consultative periods in the history of Great Britain's Amateur Radio service. In this case the word consultative means the same as public commentary.

From the outset of the consultation, as the national organisation representing all UK radio amateurs, the RSGB's intention was to ensure the maximum numbers of radio amateurs had their say in the future licensing debate that included some 15 national meetings across the nation.

Generally the feedback from the UK ham community shows that most amateurs are comfortable with the concept of an 'electronic' licence. If this was introduced they would wish to see adequate security measures built in to ensure that fraudulent applications could not be made and that the integrity of the licence is maintained.

While the majority of radio amateurs are not in favor of a 'lifetime' licence, there is much concern about the degradation of the amateur radio database and they believe that an out-of-date listing would lead to an increase in call sign piracy and more interference on the bands.

(GB2RS)

USA

10 codes R I P

Now on the lighter side

The US Federal Emergency Management Agency says that 10 codes are out.

'10 codes' are the numbers based shorthand that have been used by emergency communicators for well over four decades. The same ones adopted by 11 metre operators in the late 1960s and still used on CB to this very day. Numbered words like 10-20 for location and 10-7 for 'I am out of service'.

The agency is requiring all agencies to stop using 10 codes and instead to speak or write in clear text. And while the National Emergency Management System Integration Center says that no entity will loose funding if the mandate is not strictly adhered to, it could change this position later on.

The N.E.M.S directive only affects professional emergency communicators. Radio hobbyists are not even mentioned. So it looks as if the only ones left using 10 codes in the future will be the "good buddies" on 11 metres. And that big 10-4 will change to "Copy that!" (What happened to 'Roger' and 'Wilco'?)

(ARNewsline)

Meet Judith Oliver, WIA National Office Co-ordinator

Judith Oliver comes to the WIA with diverse skills gained from a broad career background.

She has held various management positions honing her public relations, fundraising and administrative skills across the health, aged care, community development, and youth markets in the not-for-profit, government and community sectors. She is also a qualified and experienced secondary and tertiary teacher and recently worked for an educational publisher.

Judith is enjoying the challenge of increasing her 'hands-on' administrative skills, a necessity in such a small office (where she and Emma have to wear so many different hats). Although she does not have any amateur radio experience herself, her great-uncle – Mark Oliver – was very involved in NSW in the beginning of the 20 th century (though sadly she did not get to know him).

Judith says that her biggest challenge will be to thoroughly understand and learn the 'new language and customs' of the WIA and amateur radio, and she thanks June and Emma especially for all their assistance and support in her new role managing the WIA national office.

Peter GibsonVK3AZL

Heavy duty standoff insulators for ladder line

In the 'Hints and Kinks' section of July 2005 QST, Charles Simon, N0MS, describes an interesting method for supporting heavy duty 450 ohm ladder line.

As 450 ohm ladder line offers a broad surface to windy weather conditions, strong tie points are required to resist wind buffeting and eventual breakage. The following designs meet those requirements. Figure 1 shows four different styles, for attaching the base of the insulator to the insulator to a wall or pipe. The other end of the insulator is made to secure the ladder line.

Figure 2 shows how the ladder line is secured with a cable tie.

The fabrication of the one inch PVC tube is performed with common hand tools. Following is the step by step procedure.

1. Lay out the 3.5 by 3.5 inch card stock template (shown in Figure 3) for accurate hole locations. Then punch a small hole at each hole location shown.
2. Wrap the template around the cut length of tubing at the end and mark hole locations with a black marker or pencil.
3. Centre punch each hole location and drill 7/32 inch diameter holes at locations A and B. Drill these holes through both sides of the tube.
4. Saw a 1/16 inch wide kerf around the long path from hole X to hole Y as shown in the photos and Figure 3. To get the saw kerf this wide, mount two 18 teeth per inch hacksaw blades in a hacksaw frame, together. Use a couple of wraps of electrical tape near the mounting holes to keep the blades together.
5. Deburr the holes and saw kerfs, both inside and outside of the tube, then check the clamping action with a piece of ladder line. This completes the fabrication of the insulator end that holds the ladder line.

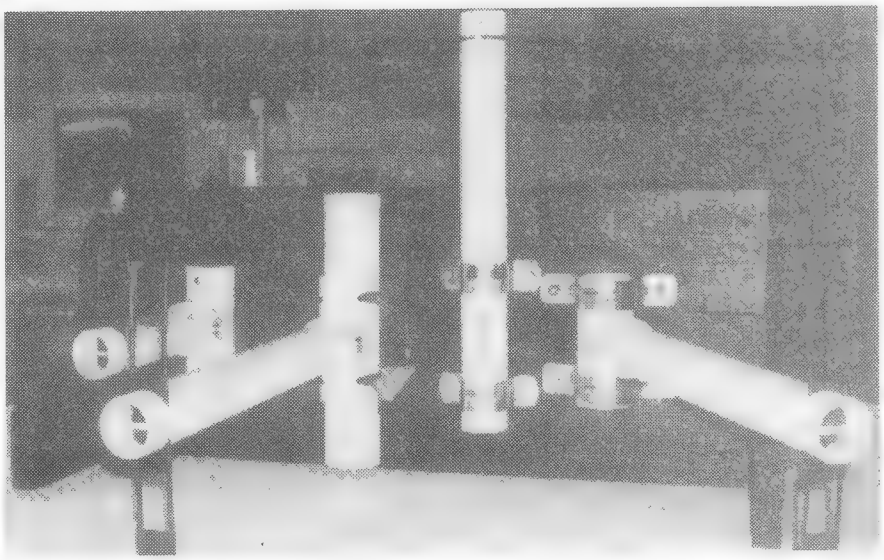


Figure 1. Four styles of PVC ladder line standoff insulators. From left to right are styles 1 through 4. Styles 1 and 2 both have the top half of the T caps removed. Style 1 is secured by long screws through the remaining cap to a wall. Style 2 is secured has tie wraps through holes in the remaining T cap securing it to a pipe. Style 3 has no T, but its tube is secured to a surface with pipe straps. In style 4, the T is secured to a wall with pipe straps.

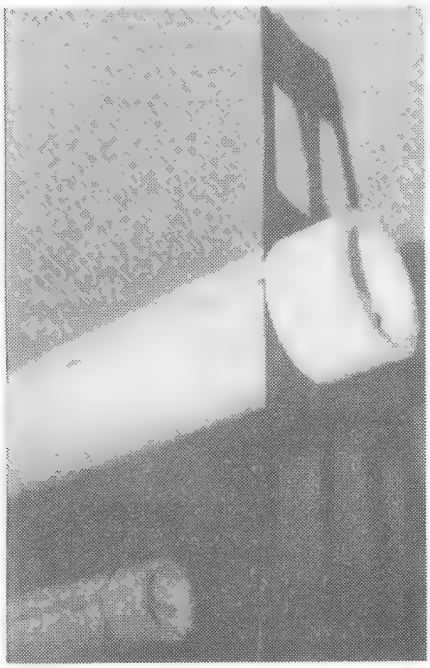


Figure 2. A cable tie clamps a kerf in the tube on the ladder line, securing it in the standoff.

For styles 1 and 2, some of the cap of the T must be removed so that the remaining cap walls will present a stable, flat, surface for mounting (see Figure 1). Also drill 7/32 inch holes as needed for mounting.

Styles 1, 2 and 4 have the tube secured to T section. After the tube is in the correct position in the T, drill a suitable sized hole through the T and tube and install a self tapping screw to stop rotation.

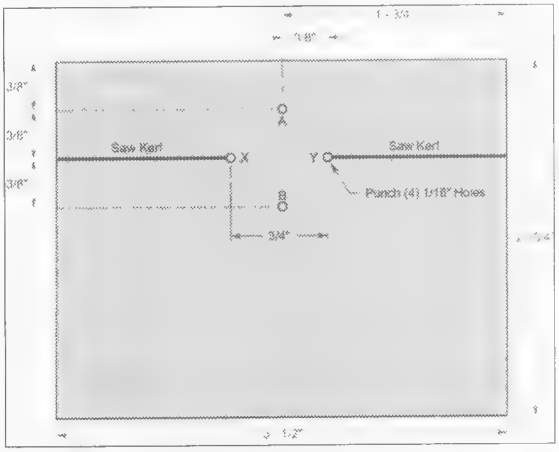


Figure 3. The template for marking the tube ends should look like this (not to scale).

HF Predictions

by Evan Jarman VK3ANI
34 Alandale Court Blackburn Vic 3130

October 2005
T index: 22

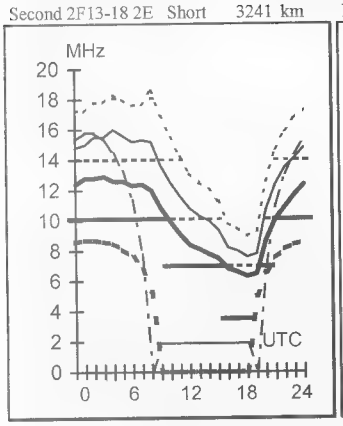
Legend
Frequency scale
UD
E-MUF
OWF
F-MUF
ALF
>10%
>50%
>90%
Time Scale

These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.
These frequencies as identified in the legend are:-

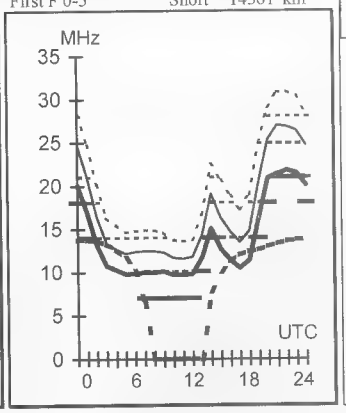
- Upper Decile (F-layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

Shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when usable. The path, propagation mode and Australian terminal bearing are also given for each circuit.
These predictions were made with the Ionospheric Prediction Service program: ASAPS Version 4

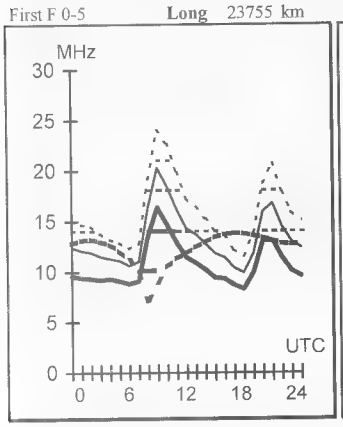
Adelaide-Auckland 104
Second 2F13-18 2E Short 3241 km



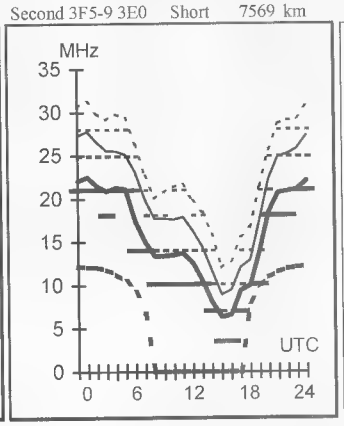
Brisbane-Chicago 57
First F 0-5 Short 14361 km



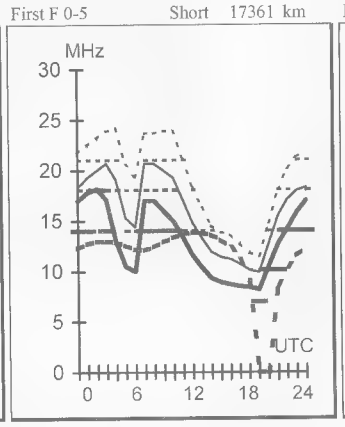
Adelaide-London 132
First F 0-5 Long 23755 km



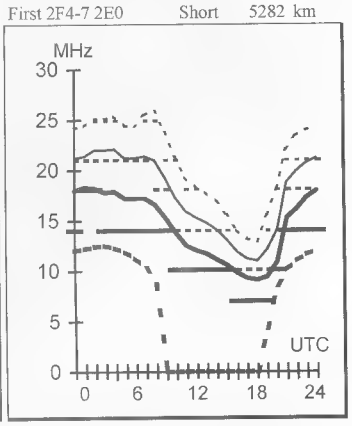
Brisbane-Honolulu 49
Second 3F5-9 3E0 Short 7569 km



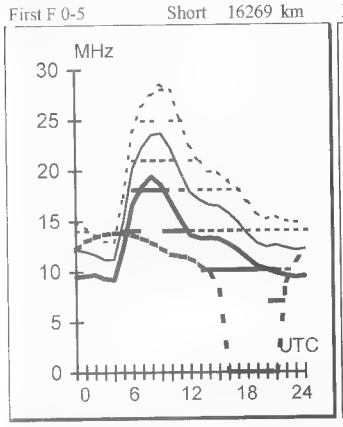
Canberra-Dakar 214
First F 0-5 Short 17361 km



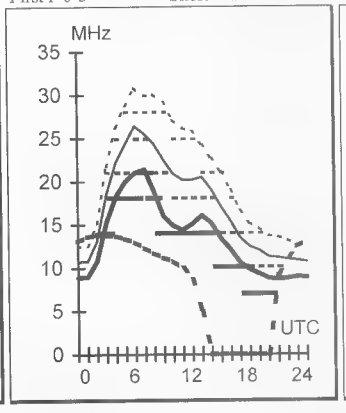
Darwin-Christchurch 139
First 2F4-7 2E0 Short 5282 km



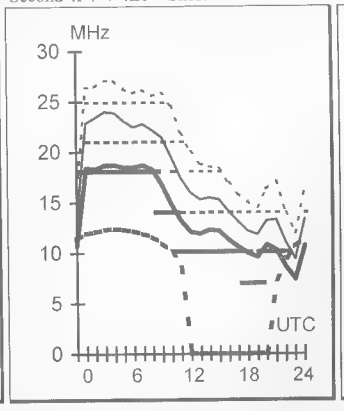
Adelaide-London 312
First F 0-5 Short 16269 km



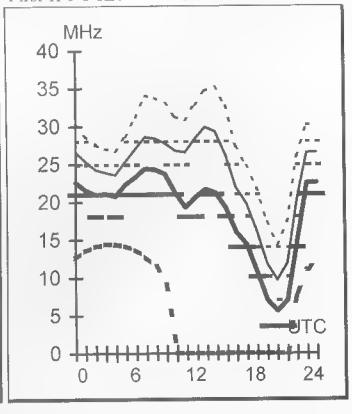
Brisbane-Moscow 321
First F 0-5 Short 14071 km



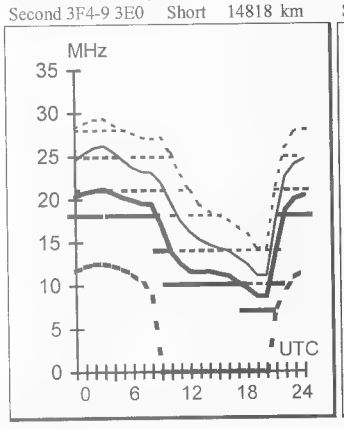
Canberra-New Delhi 303
Second 4F4–9 4E0 Short 10347 km



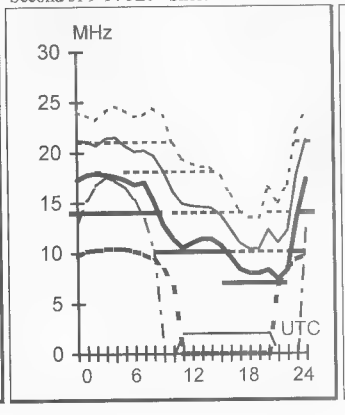
Darwin-Manila 340
First 1F1-8 1E0 Short 3196 km



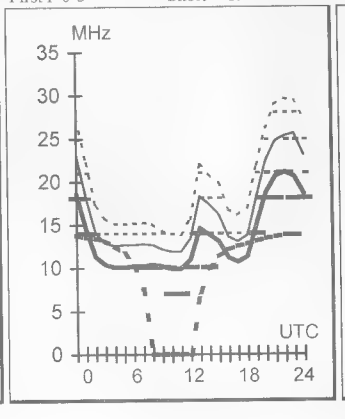
Adelaide-Tokyo 1
Second 3F4-9 3E0 Short 14818 km



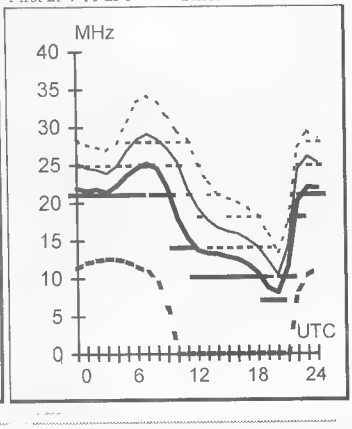
Brisbane-Singapore 293
Second 3F9-14 3E0 Short 6146 km



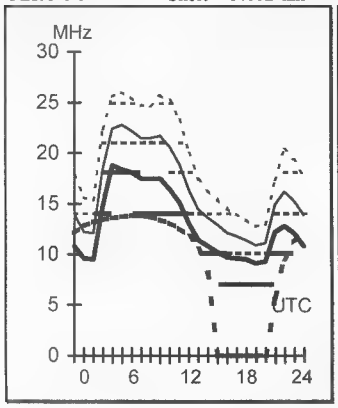
Canberra-Washington 70
First F 0-5 Short 15938 km



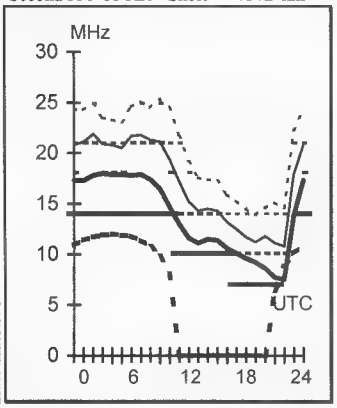
Darwin-Osaka 5
First 2F4-10 2F0 Short 5262 km



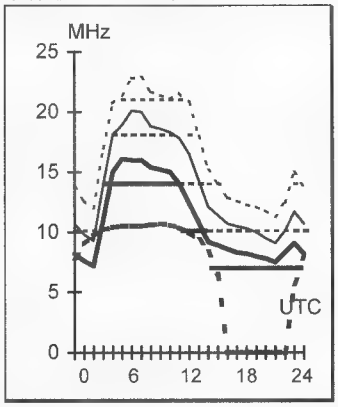
Hobart-Amman **283**
First F 0-5 Short 14002 km



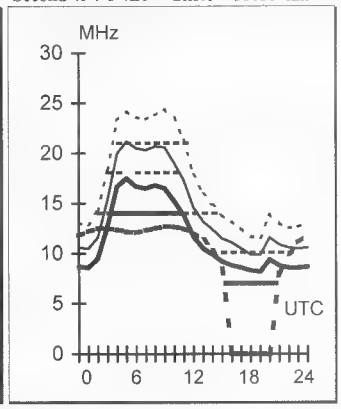
Melbourne-Bangkok **312**
Second 3F5-11 3E0 Short 7372 km



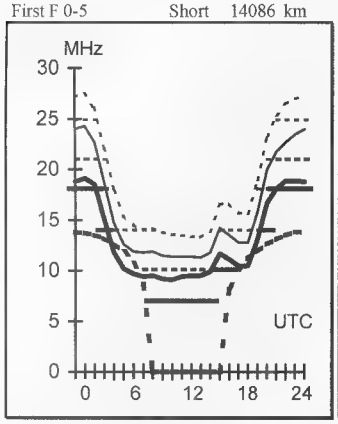
Perth-Harare **257**
Second 4F8-12 4E0 Short 8496 km



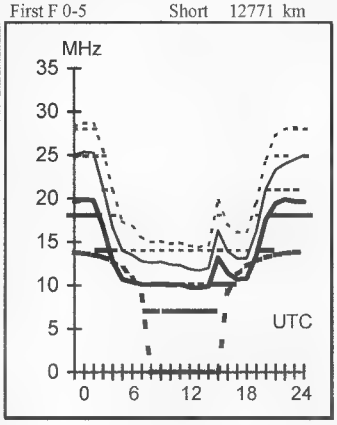
Sydney-Johannesburg **230**
Second 4F4-8 4E0 Short 11035 km



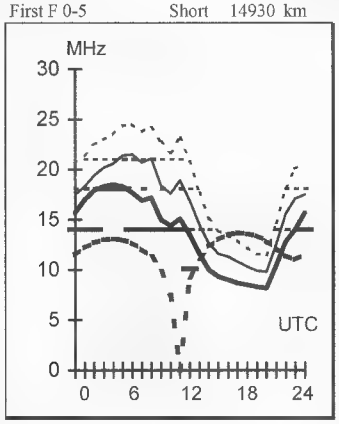
Hobart-Cagary **51**
First F 0-5 Short 14086 km



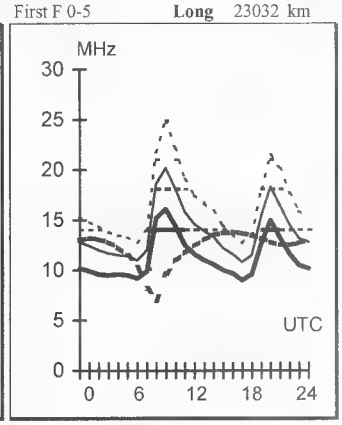
Melbourne-Los Angeles **65**
First F 0-5 Short 12771 km



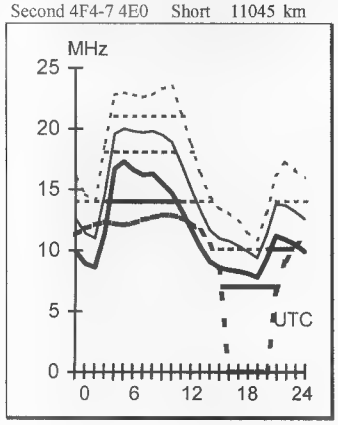
Perth-Lima **162**
First F 0-5 Short 14930 km



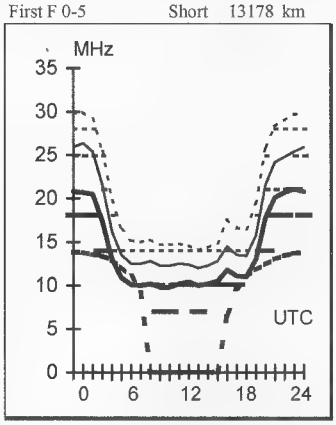
Sydney-London **139**
First F 0-5 **Long** 23032 km



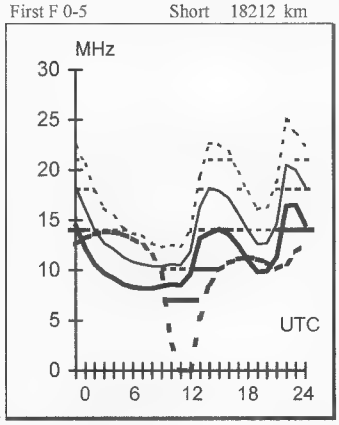
Hobart-Lusaka **239**
Second 4F4-7 4E0 Short 11045 km



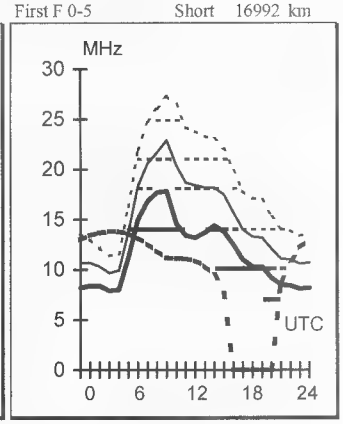
Melbourne-Seattle **50**
First F 0-5 Short 13178 km



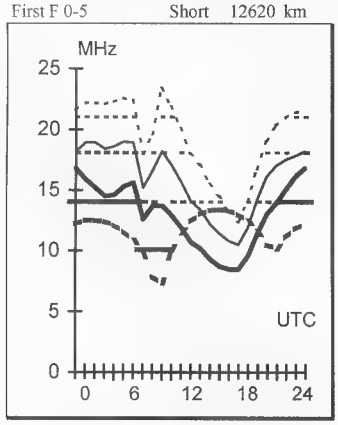
Perth-Ottawa **30**
First F 0-5 Short 18212 km



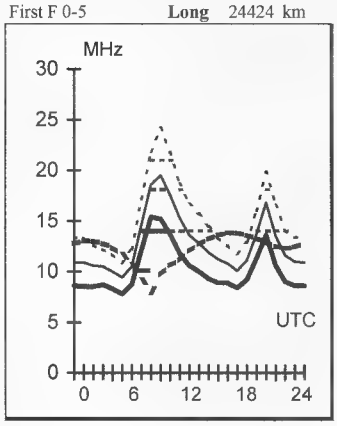
Sydney-London **319**
First F 0-5 Short 16992 km



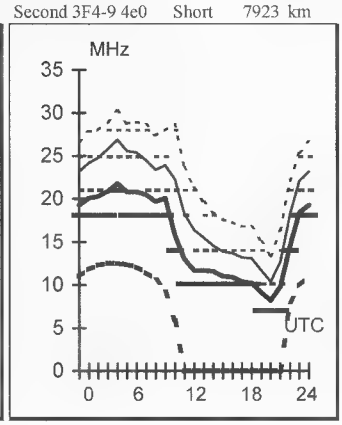
Hobart-Rio de Janeiro **169**
First F 0-5 Short 12620 km



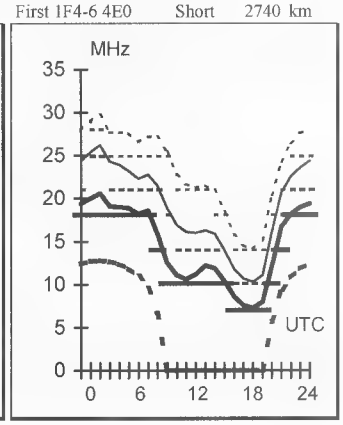
Melbourne-Stockholm **140**
First F 0-5 **Long** 24424 km



Perth-Tokyo **20**
Second 3F4-9 4e0 Short 7923 km



Sydney-Port Moresby **351**
First 1F4-6 4E0 Short 2740 km



Hamads *classifieds* FREE

FOR SALE-NSW

• **Kiron Sat Trak 4** an azimuth/elevation rotator interface. Works directly with Yaesu rotators. An interface kit is included for work with other rotators. Tom, VK2OE@arrl.net 2/25 Andrew St Inverell NSW 2360 Phone 0413 796 851 evenings.

WANTED NSW

• **Realistic HTX-100 10m transceiver** in good condition. Leigh Rainbird VK2KRR, Phone 02 69202212, 0419631199, vk2krr@bigpond.com

FOR SALE VIC

• **6 m Yagi Antenna ATN model 50-52.5,** 5 el 11.9 dBi gain, 3.5 m boom c/w feed balun. Classic ATN design, solid boom etc. Taken out of service about a year ago after many years faithful performance. Alas, due to renovations and build-out I no longer have a usable outlook for the "magic band". Element mounting bolts all renewed. Breaks down to about 1.8 m length for shipping by road. $90 Terry VK3ZXY QTHR Phone 03 9592 3514 email vh3zxy@leithy.com.

• Deceased Estate. **AOR AR7030 0-32 MHz** all modes S/n: 101410 fitted extra HQ Murata 1 kHz, 4 kHz, total 6 filters, manual, new battery, PC data cable $1,239 ($2,105). **AOR AR8200** mk2 wide range receiver S/n: 078011 $649 ($1,090). **RF Systems DX-Oneant** $649 ($1,150) all EC. **HF Dipole ant.** 7-21 MHz 2 kw $155, **Kenwood Ant. Tuner AT-230** $55 all GC. Call Mark on 03 9755 7295 Mobile: 0412 821 694 email: e-service@tpg.com.au.

WANTED QLD

• **Operators/service handbooks** (or copy) for **HP AF generator model 200CD** and **Marconi power meter model 893A.** Will refund all costs. Gwen VK4CB QTHR Phone 07 3202 7137

• **Circuit diagram of a Magnum by Palomar solid state HF amp.** Believed to be made for CB but not sure. Any information would be appreciated and all expenses paid. Merv VK4DV QTHR Phone 07 4928 5537 (nights).

FOR SALE WA

• **FT-1000D,** S/N OJ 090225, with 250, 500 and 2kHz xtal filters and handbook. VK6HD@iinet.net.au

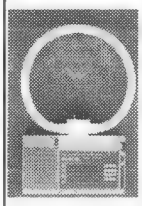
WANTED TAS

• **BC-221 frequency meter for parts.** Prefer unit with dial mechanism in good condition. Trevor VK7TB Phone 03 6398 2118, email cabriggs@optusnet.com.au

MISCELLANEOUS

• **Wanted to assist documenting the history of AWA Teleradios.** Pictures, manuals, catalogues, articles, any information on these sets. Will pay for copying, etc. Contact Malcolm Haskard VK5BA, Phone/fax 08 8280 7192, email mhaskard@chariot.net.au

Tunable Loop Antenna enhances AM Reception



AM radio reception (530 to 1900KHz) enhanced. Reception where none existed before; works indoors, **even in interference-polluted areas**
High value — low cost.
Simple, no connections or batteries
Ideal for touring, caravan, boat and fringe areas. Use anywhere.

www.amradioantennas.com
pkloops@bigpond.net.au
Paul 0412 302 939
PK's Loop Antennas

AMIDON FERROMAGNETIC CORES
For all RF/electronic applications.
See our website for complete data on all cores including prices.
www.catchnet.com.au/~rjandusimports
RJ & US Imports
PO Box 431, Kiama NSW 2533.
A 3.5" PC disk containing all data is available for $5.00 incl. post.

Agencies
Active Electronics, Tas
TTS Systems, Tyabb (VIC)
Tower Communications, Perth
Ozhelp Services, Brisbane

HF, VHF, UHF ANTENNAS & ACCESSORIES
Aluminium towers, guys etc
Diamond VSWR/PWR meters.
HD copper antenna wire & insulators, TX tubes & pwr transistors, full range Create Rotators
Quality coax cables & connectors. Free advice & catalogue.
ATN Antennas
Ph 03 5492 2224 Fax 03 5492 2666,
email atnant@iinet.net.au
PO Box 80, Birchip Vic 3483

JACKSON BROS
JACKSON OF THE UK IS BACK
Highest quality products made by UK craftsmen
Full range now off-the-shelf in Australia.
Variable and trimmer capacitors, reduction drives, dials, ceramic standoffs

CATALOGUES, PRICE LISTS AVAILABLE
CHARLES I COOKSON PTY LTD
11-13 Port Rd
Queenstown SA 5014
Tel: (08) 8240 3200 Fax: (08) 8240 3233
FreeFax 1800 673355 within Australia
Email: jackson@homeplanet.com.au
ALL MAJOR CREDIT CARDS ACCEPTED
SOLE AGENTS AUSTRALIA AND NEW ZEALAND

About hamads....

- Hamads may be submitted by **email (preferred)** or on the **form on the reverse of your current Amateur Radio address flysheet**. Please print carefully and clearly, use upper AND lower case.
- Separate forms for For Sale and Wanted items. Please include name, address STD telephone number and WIA membership number if you do not use the flysheet.
- Deceased estates Hamads will be published in full, even if the ad is not fully radio equipment.
- WIA policy recommends that the serial number of all equipment for sale should be included.
- QTHR means the address is correct in the current WIA Call Book.
- Ordinary Hamads from those who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.
- Commercial advertising (Trade Hamads) are prepayable at $25.00 for four lines (twenty words), plus $2.25 per line (or part thereof), Forty word maximum, minimum charge of $25.00. Cheques are to be made out to: WIA Hamads.
- Copy typed or printed clearly please, and received by the deadlines shown on page 1 of each issue of Amateur Radio.

Email: ***newunltd@bigpond.net.au***

Postal: *Newsletters Unlimited, PO Box 431, Monbulk Vic 3793.* **Fax:** *03 9756 7031*

TRADE PRACTICES ACT
It is impossible for us to ensure that the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore, advertisers and advertising agents will appreciate the absolute need for themselves to ensure that the provisions of the Act are strictly complied with.

VICTORIAN CONSUMER AFFAIRS ACT
All advertisers are advised that advertisements containing only a PO Box number as the address cannot be accepted without the addition of the business address of the box-holder or seller of the goods.

ADVERTISERS INDEX

AEI....14
Andrews....29
Benelec....IFC
Clarke....40
Com-an-tena....8
TET-Emtron....9
G & C....17
Icom....OBC
Ozgear....17
TTS....23
Small ads....55
VK Discounts....55
VK Books....35
Winlink....17
www.vk3ajj.com....55

VK DISCOUNT CABLES

The RF Specialists

SUPPLIERS, IMPORTERS & MANUFACTURERS
Servicing All Commercial & Amateur Radio Applications & Electrical Industries
ABN: 82 117 006 496

SPECIALISING IN

- RG SERIES COAX
- ULTRAFLEXIBLE COAX
- HELIAX CORRUGATED HARDLINES
- WAVEGUIDES & SEMI-RIGID
- HI-TEMP TEFLON COAX
- 300 & 450 OHM LADDERLINES
- MULTI-CORE CONTROL CABLES
- ALL COAX/HARDLINE CONNECTORS
- HARD DRAWN & SOFT DRAWN COPPER WIRE
- ENAMELLED COPPER WIRE
- SCOTCH TAPE PRODUCTS / CABLE TIES
- CERAMIC & PVC INSULATORS
- FLAT EARTH BRAID
- HEATSHRINK TUBING – All types & Sizes
- DACRON & KEVLAR UV ROPES
- MOBILE ANTENNAS – Stainless & fibreglass construction
- DIPOLE & WIRE ANTENNAS
- LIGHTNING PROTECTION
- SERVICE TO – GOVERNMENT, MEDICAL, MARINE, BROADCAST & DEFENCE SERVICES

TECHNICAL DATA AVAILABLE ON REQUEST.
CABLE SAMPLES AVAILABLE ON REQUEST.

We supply professional pre-assembled cable sets of any length with any connector, for any job.

Have your installation look commercial & professional with custom manufactured wall plates .

OUR WARRANTY

All RG cable assemblies, hold a 6 year warranty.
All Times LMR and Hardline cable assemblies hold a 12 year warranty.

- 300 & 450 OHM LADDER LINE from – $1.00 p/m
- RG-213 MIL-C-17D - $145.00 per 100m
- RG-58CU MIL-C-17D - $50.00 per 100m
- Bel-9913 Equiv – $3.90 p/m
- 1/4 inch HELIAX - $4.00 p/m
- 1/2 inch HELIAX - $4.95 p/m
- 7/8 inch HELIAX - $8.95 p/m
- 5,7 & 8 core Control Cable from $0.90 p/m (All cables Available in 100m, 500m & 1000m qty)
- 2KW 1:1 & 4:1 BALUNS from $50.00 EA
- DIPOLE CENTRES with SO239 - $16 ea
- LADDERLINE CENTRES - $20 ea
- CERAMIC EGGS from $1.00 EA
- AMERITRON RCS-8VX - $319
- AMERITRON RCS-10VX - $339
- ALPHA, HENRY, MIRAGE & AMERITRON

LINEAR AMPLIFIERS – TO ORDER

MFJ ANTENNA ANALYSER SPECIALS

HUGE STOCKS – NOW ON SALE !

- MFJ-269 PRO HF/VHF/UHF - $649
- MFJ-269 HF/VHF/UHF - $549
- MFJ-259B HF/VHF - $399

With every Analyser sold, receive a protective padded case at half price, valued at $49.95
Offer Includes freight Australia wide !

NEW PRODUCT LINES

HUGE STOCKS NOW ON SALE!

All ***HEIL*** MICROPHONES and ACCESSORIES

- PROSET HC4 / HC5 - $269.00
- PROSET PLUS - $279.00
- GOLDLINE P.A. MIC - $269.00
- FS2 PTT FOOTSWITCH - $66.00
- HS2 PTT HANDSWITCH - $89.00
- TRAVELLER-ICOM - $169.00
- TRAVELLER-KENWOOD - $169.00
- TRAVELLER-YAESU - $169.00

Receive required AD1 adaptor at half price with every PRO-Headset sold, valued at $30.00
Receive required CC1 adaptor at half price with every P.A. mic sold, valued at $49.00

Offer Includes freight Australia wide !

SWR/PWR METERS by ***DAIWA, BYRD & MFJ***

Free Hi quality Patch lead with every SWR Meter sold.

Offer Includes freight Australia wide!

ALL ABOVE SPECIALS FOR OCTOBER ONLY

FREE CATALOGUE AVAILABLE

Make us your last call, as we will be your first choice on Service, Technical advice and the best possible price !
PAY BY – MASTERCARD, VISA, BANKCARD
Disclaimer: Prices subject to change without notice. Prices inclusive of G.S.T.

ROB LONG, Director Office: +61-2-4862-2110 BH
EMAIL: rob_vk2xz@hotmail.com
WEBSITE COMING SOON

"Hey, Old Timer..."

If you have been licensed for more than 25 years you are invited to join the

Radio Amateurs Old Timers Club Australia

or if you have been licensed for **less than 25 but more than ten years**, you are invited to become an **Associate Member** of the RAOTC.

In either case a **$5.00** joining fee plus **$8.00** for one year or **$15.00** for two years gets you two interesting OTN Journals a year plus good fellowship.

Write to
RAOTC,
PO Box 107
Mentone VIC 3194
or call Arthur VK3VQ on **03 9598 4262** or
Bill VK3BR on **03 9584 9512**,
or email to raotc@raotc.org.au
for an application form.

radio and electronics school

Become a Radio Amateur

Or study radio electronics to support your hobby

Australia's premier training institution for
AMATEUR RADIO AND HOBBYISTS
courses available in radio & electronics technology for all ages

COURSES AVAILABLE ONLINE
Be guided through your course by one or more of our 20 experienced volunteer facilitators, email hundreds of other students

IN A HURRY?
Become a novice radio operator in 4 weeks with our computer-based
NOVICE FAST-TRACK COURSE
Courses for schools, youth organisations and seniors

Australian Radio Certificate Scheme (ARCS)
Use our accredited bridging program for radio amateurs to obtain a
CERTIFICATE IN ELECTROTECHNOLOGY
Download all course materials free
(CD Rom has a small fee)
For Further Infrmation visit
http://radioelectronicschool.com
or email
manager@radioelectronicschool.com
Tel: (07) 5573 2795 12-5 (EST)

RADIOS:

	Unused	*Used*
Icom 706MK2G	Ring/email	$1199
Icom 208H	$ 550	$ 499
Icom 910H	$1999	$1699
Icom 756PRO2	N/A	$2799
Icom 756PRO3	$4499	N/A
Kenwood TS2000	$2699	$2299
Kenwood TS2000X	$3599	N/A
Kenwood TS480SAT	$1899	$1599
Kenwood TS480HX	$1999	$1699
Kenwood TS570DG	N/A	$1399
Kenwood TMD700A	$ 849	$ 799
Kenwood THD7A	$ 599	$ 549
Yaesu FT8900R	$ 649	N/A
Yaesu VX7R	$ 549	N/A
Yaesu FT1000MP MKV	$3599	$3199
Yaesu FT1000 Field	$3199	$2799
Yaesu FT847	N/A	$1799
Yaesu FT857D	$1249	$1149
Yaesu FT897D	$1299	N/A
Yaesu FT100D	N/A	$1199

ACCESSORIES:

Doss 40 AMP PSU	$ 225	N/A
Icom AH4 ATU	$ 489	$ 425
Icom AT180	N/A	$ 499
Tokyo HL700B HF Amp	$1899	
Tokyo HL200V50 2M Amp	$ 649	
MFJ 993 ATU	$449	

Call / email re Heil and MFJ products

DOA warranty applicable on all items (ie if it is not 100% and in condx as described, a full money back g'tee applies)

OTHER CURRENT MODELS AVAILABLE

ALL USED GEAR IN EXC CONDX WITH ORIGINAL BOX AND ACCESSORIES

PRICES SUBJECT TO CHANGE - CHECK WEBSITE FOR LATEST (OR RING)

WILL CONSIDER TRADE-INS - BUT MUST BE CURRENT MODEL GEAR (IE LAST 5 YEARS)

Ship anywhere in VK/ZL (freight extra)

ORDER ONLINE AT

WWW.VK3AJJ.COM

OR TELEPHONE PAUL ~
(03) 9018 9757
Mob. 0410 093 759
vk3ajj@iinet.net.au

NB - I am not an authorised dealer for the radio companies listed above. These companies may refuse service on equipment sold by me - but other servicing options are available in the VK market.

Licensed Second Hand Dealer NO 10229 (Vic)

WWW.VK3AJJ.COM - giving Aussie Hams a FAIR GO!

Directory

The Amateur Service:

a radio communications service for the purpose of self training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique with a personal aim and without any pecuniary interest. 1.56 ITU Radio Regulations.

The Wireless Institute of Australia represents the interests of all amateurs throughout Australia.

WIA membership fees are: ★ **$ 75 for full members (F grade),** ★ **$ 70 for pensioners and students (G and S grade), and** ★ **$ 50 for membership without 'Amateur Radio' (X grade).** ***Payment direct to National office.***

National Office	Contact	News Bulletin Schedule
10/229 Balaclava Road, Caulfield North VIC 3161, PO Box 2175 Caulfield Junction Vic 3161 Australia	Phone 03 9528 5962, Fax 03 9523 8191, 10am to 4pm daily, nationaloffice@wia.org.au http://www.wia.org.au	Subject to change see www.wia.org.au follow national news prompts. Contact nationalnews@wia.org.au National VK1WIA news is distributed to all states.

Advisory Committees	Contact	News Bulletin Schedule
VK1 Australian Capital Territory VK1WX Alan Hawes VK1ZPL Phil Longworth VK1ET John Woolner VK1GH Gil Hughes	secretary@vk1.wia.ampr.org	Sundays at 11.00 am VK1WIA 7.128, 146.950,438.050 Canberra Region Amateur Radio Club Email newsletter will be sent on request to president@vk1.ampr.org
VK2 New South Wales VK2QV Chris Flak VK2XCD Chris Devery VK2BFN Adrian Clout	Phone 02 9689 2417	VK2WI - Sunday 1000 and 1930 hours local.1.845; 3.595; 7.146; 10.125; 14.170; 28.320, 52.525; 145.600; 147.000; 438.525; 1273.500 megahertz. Plus regional relays. VK1WIA news included in the morning
VK3 Victoria VK3JJB John Brown VK3PC Jim Linton VK3APO Peter Mill	Phone 03 9885 9261 advisory@wiavic.org.au	VK1WIA Sunday 11.0am via HF and major VHF / UHF rptrs
VK4 Queensland VK4ERM Ewan McLeod VK4ZZ Gavin Reibelt	Phone 07 3221 9377 ewan.mcleod@bigpond.com	VK1WIA, Sunday 9.0am via HF and major VHF/UHF rptrs
VK5 South Australia and Northern Territory VK5NB Jim McLachlan VK5APR Peter Reichelt VK5ATQ Trevor Quick	Phone 08 8294 2992 jimac@picknowl.com.au peter.reichelt@bigpond.com vk5atq@chariot.net.au	VK5WI: 1843 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.800 FM Mildura, 146.900 FM South East, 146.925 FM Central North, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 LSB, 7.065 LSB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. The repeat of the broadcast occurs Monday Nights at 1930hrs on 3585kHz and 146.675 MHz FM. The broadcast is available in 'Realaudio' format from the website at www.sant.wia.org.au Broadcast Page area.
VK6 Western Australia VK6NE Neil Penfold VK6XV Roy Watkins VK6OO Bruce Hedland-Thomas	Phone 08 9351 8873 http://www.vk6.net/ advisory@vk6.net vk6ne@upnaway.com vk6xv@bigpond.net.au	VK6WIA: 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz, Country relays 3.582, 147.200 (R) Cataby, 147.350 (R) Busselton, 146.900 (R) Mt William (Bunbury).147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438.525 MHz : country relays on 146.900,147.000, 147.200, 147.250 and 147.350 MHz..Also in "Real Audio" format from the VK6 WIA website
VK7 Tasmania VK7ZAX Phil Corby VK7DG Dale Barnes VK7KK Reg Emmett	Phone 03 6234 3553 phil.corby@tassie.net.au vk7dg@wia.org.au regemm@ozemail.com.au	VK1WIA Sunday 9am on VK7WI network: 3.570MHz LSB, 146.700 MHz FM (VK7RHT South), 53.825MHZ FM (VK7RAD South), 147.000MHz FM (VK7RAA North), 146.750 FM & 53.825MHz (VK7RNW North West), 146.625 MHz FM (VK7RMD North West), UHF CB Channel 15 (Hobart) and 27MHz CB - 27.225MHz LSB (Hobart). Followed at 9:30am with VK7 Regional News Broadcast also on 7.090MHz LSB & 14.130MHz USB

Notes

1. Only three members of the state advisory committees are listed.
2. All listings are preliminary. They will be updated each month as required.
3. Membership application forms are available from the WIA web site www.wia.org.au or the national office address above.

New Awards

Mal Johnson VK6LC

The WIA Awards are proudly to release two final A3 sized DXCC Certificates that complete the total range

Wireless Institute of Australia
9BDXCC
DX Master Award
10-12-15-17-20-30-40-80-160m.
Honour Roll
DXCC Excellence
This is to certify that W.I.A. Awards Program.VK2005
has been enrolled as a member of the Wireless Institute of Australia 9 Band DX Century Club for having conducted two way "Phone" radio communication with amateur radio stations located in
900 Countries
Issued. 1st. September 2005. Certificate No. Sample only Awards Manager. M.K. Johnson. VK6LC
Sponsored by: VK Classifieds - Image donated by the Australian Bureau of Meteorology
DXCC 1000 DXCC 1100 DXCC 1200 DXCC 1300 DXCC 1400 DXCC 1500 DXCC 1600 DXCC 1700 DXCC 1800 DXCC 1900 DXCC 2000 DXCC 2100 DXCC 2200 DXCC 2300

We are the first in the World to do this and further details will be written up soon.

The 9 Band DXCC "9BDXCC" and 11 Band DXCC "11 BDXCC" can be viewed also on the awards website.

These awards are available now for submissions and treated as "Specials", a small fee will be required.

See 'Awards' column on page 34

Wireless Institute of Australia
11BDXCC
DX Supreme Award
2-6-10-12-15-17-20-30-40-80-160m.
Honour Roll
DXCC Excellence
This is to certify that W.I.A. Awards Program.VK2005
has been enrolled as a member of the Wireless Institute of Australia 11 Band DX Century Club for having conducted two way "Phone" radio communication with amateur radio stations located in
1100 Countries
Issued. 1st. September 2005. Certificate No. Sample only Awards Manager. M.K. Johnson. VK6LC
Sponsored by: VK Classifieds - Image donated by SSEC/UW-Madison
DXCC 550 DXCC 600 DXCC 650 DXCC 700 DXCC 750 DXCC 800 DXCC 850 DXCC 900 DXCC 1000 DXCC 1100

ICOM'S PRICE BREAK THROUGH

MOST AFFORDABLE PRICES EVER

ICOM FLAGSHIP TRANSCEIVER

IC-7800 HF*6m

• Four 32-bit floating point DSP units • +40dBm ultra high intercept point • Automatic tracking pre-selector • Two completely independent receiver circuits • 200W output power at full duty • Ultra high frequency stability • 7-inch wide color TFT LCD • Multi function spectrum scope • RTTY / PSK31 operation without PC connection • Professional 6m receiver • Digital Voice Recorder • CF memory card

NEW

IC-756PRO III HF*6m

Sharp & soft IF filter shape • New receiver gives +30dBm third-order intercept point • One-touch record/play Digital voice memory • Extended 1/4 Tuning step & BPF functions for SSB-D mode • 32-bit floating-point DSP and 24-bit AD/DA converter • SSB/CW sychronous tuning • 5-inch color TFT LCD • Built-in antenna tuner • Customisable filter shap • No optional filters to buy

IC-706MKIIG

The amazing evolution of the legendary 706

Now includes 70cm @ 20W and 50W on 2m Standard feature dsp • Built in sub tone encoder & decoder Tone scan • Mosfet PA • You get base station performance and features in a mobile rig sized package

NEW

IC-2200H

High (65W) Power Output • DTCS & CTCSS Tone Squelch • DTMF Encode & Decode (with optional UT108) • Digital Voice & Data Communication (with optional UT118 • 207 Alphanumeric Memories

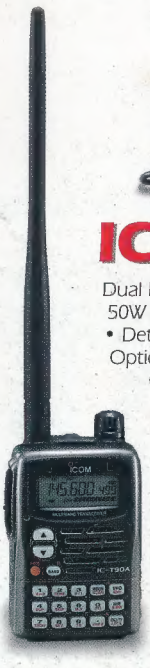
NEW

IC-V82 7w VHF Handheld

207 Alphanumeric memories • DTCS & CTCSS Tone Squelch • DTMF encoder • Digital voice and data communication (Req. UT114 option) • GPS receiver can be connected • BNC type antenna connector

IC-208H FM Dual Band Transceiver

Dual Band Features at a Single Band Price • 55W / 2m, 50W / 70cm • Built-in CTCSS and DTCS Tone Squelch • Detachable Front Panel standard (Req. OPC-600/601 Option) • 9600 bps Packet Operation • 512 Memory Channel • Standard Mic. Supplied: HM133.



IC-T90A A new 5W Triband handheld

VHF/UHF FM 2M, 6M, & 70CM Wideband receive 495 KHz - 1 GHz 555 Alphanumeric memories • 13 Scan modes DTCS & CTCSS encode & decode DTMF encoder (10 memories) Wide/narrow transmit capability.

AIRBAND **AMATEUR** LAND MOBILE MARINE RECEIVER UHF CB

ICOM

ICOM 48

Call you local ICOM dealer

www.icom.net.au or (03) 9549 7500

Volume 73 Number 10 OCTOBER 2005 Print Post Approved PP349181/00420